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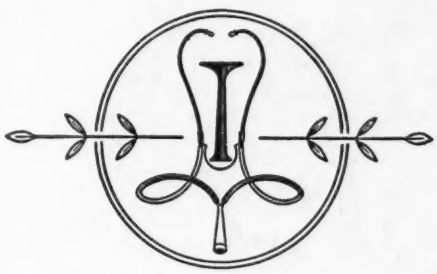

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82nd ANNUAL SESSION, Topeka, May 12-13-14-15, 1941

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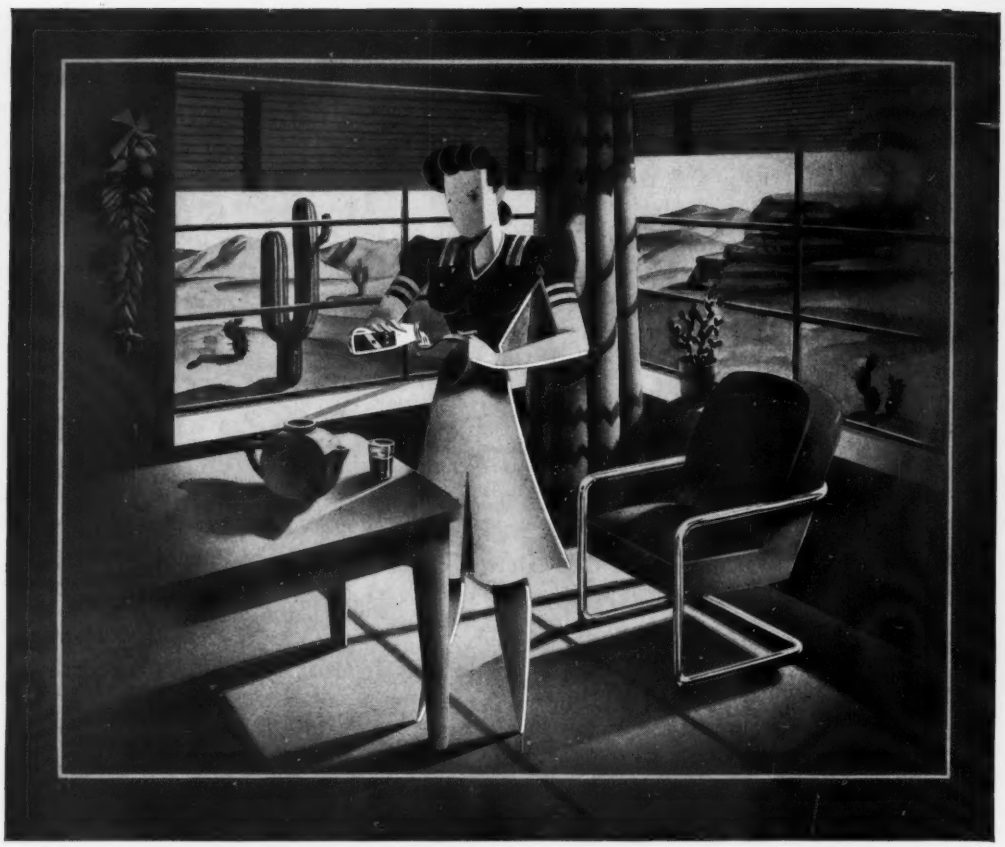

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Entered as second-class matter, May 2, 1914, at the Postoffice at Topeka, Kansas, under the Act of March 3, 1879. Accepted for mailing at special rate of postage provided for in Section 1103, October 3, 1917. Authorized on July 2, 1918.

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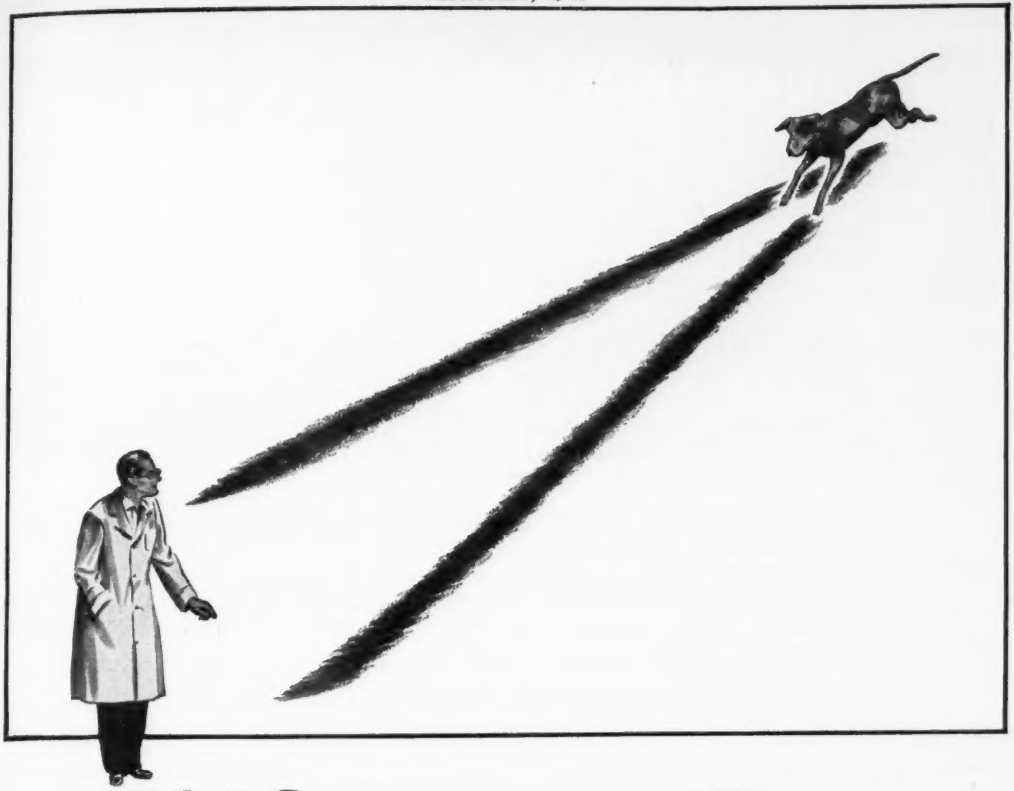

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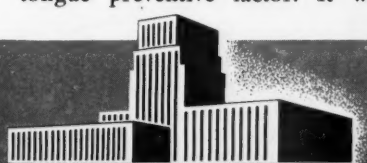

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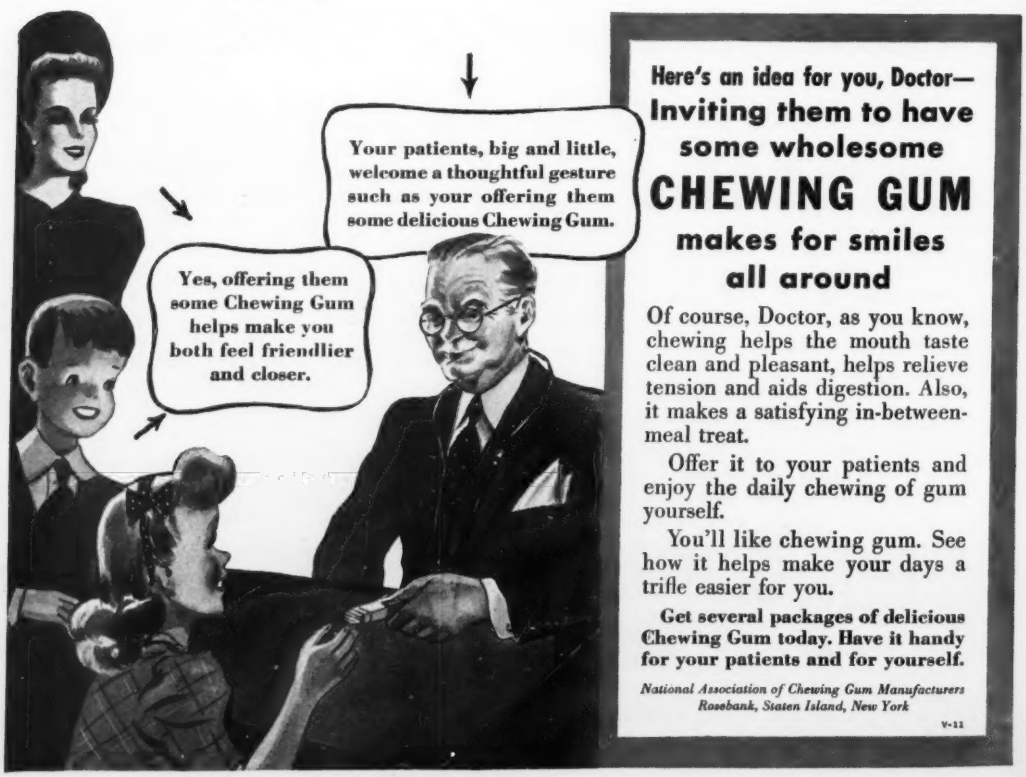
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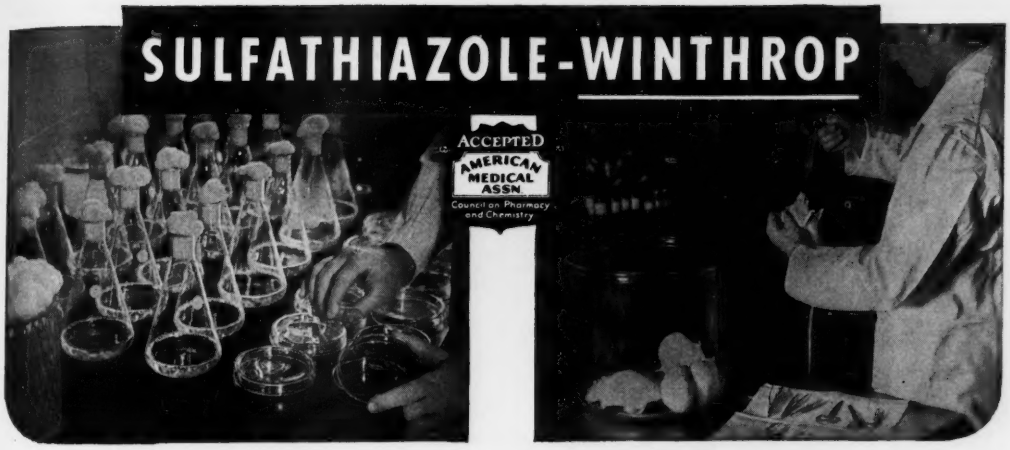

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THE JOURNAL OF
THE KANSAS MEDICAL SOCIETY

Owned and Published by The Kansas Medical Society

Volume XLII FEBRUARY, 1941 Number 2

THE PREVENTION OF TOXEMIA IN PREGNANCY*

Charles Edwin Galloway, M.D.

Evanston, Illinois

I wish to state in the beginning that the subject discussed herein is prevention and not treatment of toxemia at the Evanston Hospital. We have had very little experience in the treatment of severe toxemia or eclampsia. Over a period of ten years, out of 8,307 deliveries we have had only eight cases of eclampsia and three of these cases had never been seen previous to their entrance into the hospital and all eight of them recovered. I also wish to say that since the cause of eclampsia and pre-eclamptic toxemia is unknown, it would not seem wrong if some empiricism is included in some of the things herein suggested. In William's Obstetrics, for example, there are listed thirteen possible solutions to the problem. The most accepted opinion is that eclampsia is due to some poison maternal or fetal in origin, or both.

Early vomiting of pregnancy could more than likely be eliminated as a state of toxemia; although there are a very few cases in which vomiting may be due to toxemia, usually it is true that they have become toxic because they vomited. We know of no other animal that starts vomiting when it is pregnant but we do see cases of eclampsia near term and postpartum among our domestic animals. Neither will we discuss nephritis here as it can be generally differentiated from pre-eclamptic toxemia by the history and the various physical findings and laboratory tests. Most intelligent adults know they have nephritis before we as obstetricians are consulted by them.

If I may be pardoned for a few generalities at this moment, I would like to say that the care of pregnancy should be shared by the patient more and more as time goes on. At present our women are put through school without proper training for their life's work and it is hoped that as time goes on they will be properly taught more about reproduction and the things pertaining to their own responsibilities. Today too many of our women are well versed in contraception and too few have even a rudimentary knowledge of reproduction sufficient to cooperate well with their obstetrician. A girl's school teaches our girls the same subjects taught our boys. The young man comes to his responsibilities well prepared but some of our coeds come to theirs so frightened they can do little or nothing but vomit. On the other hand, their knowledge of contraception is complete at a rather early age. The birth rate in this country as a whole decreased thirty-three per cent between 1915 and 1936. I believe everyone is aware of the fact that this same condition prevailed in France prior to her downfall. It may be that we here are under the same influences that they were under. Primipara comprise thirty per cent of all labor cases but toxemia is nine times as frequent in primipara as in multipara. It can therefore be seen that we must give the patient having her first baby very diligent care in an attempt to prevent her from becoming toxic.

Close contact with one's patient with frequent examinations and advice will yield the best results. In order to obtain her cooperation one should quote her a flat fee for her entire care instead of separate fees for each visit. In this way she will feel free to come as often as requested. We will also in turn eliminate the temptation to interfere with forceps or other operative procedures which might in turn permit us to increase her fee. This same practice will also in time lead to her coming for her care at a much earlier date in her pregnancy. Too many women when pregnant present themselves for care only when they are in trouble or even wait until the onset of labor.

One does not need a large scientific laboratory to practice good obstetrics. Blood chemistry is of very little practical value at the present time. If we were to outline the care of the pregnant woman and name the five instruments of attack which we have at our command and should use, they would be about as follows:

1. A general physical examination and an attempt to eliminate all physical defect.

*Presented at the 81st Annual Session of The Kansas Medical Society, Wichita, May 14, 1940.

2. A scale.
3. A blood pressure apparatus.
4. A test tube and burner.
5. A knowledge of food.

GENERAL

All foci of infection should be eliminated. Infected tonsils and teeth should be removed early in pregnancy. For the past twelve years I have required a full-mouth x-ray of the patient's teeth shortly after her first visit and if apical abscesses are present those teeth should be extracted. I have found that fifteen per cent of my patients have abscessed teeth in spite of good dental care.

The basal metabolic rate is also important. An increased rate up to plus twenty may be looked upon as being within normal but if, as pregnancy advances, the basal rate remains low the patient should be given thyroid extract sufficient to correct it.

The patient's elimination is very important throughout her pregnancy but more so during the last trimester. Epsom salts should be used as often as every two or three days in some cases but not for long. Too much catharsis abstracts fluid from the circulation thus decreasing the urine and putting an additional strain on the kidney. In order to increase the urinary output daily doses of ammonium nitrate may be used—six to ten grains. As a rule, the volume intake of fluids should be less than the output if edema is present and one should consider from ten to thirty per cent of the ingested fluids being lost by way of the lungs and skin, depending on surrounding temperature and humidity.

Every toxic patient should have her activities curbed. She should be at rest, depending upon the severity of the case, from twelve to twenty-four hours a day. Too often we attempt to increase the elimination and decrease the production of metabolic products and at the same time fail to eliminate the activity which produces many of them. Sedatives should be used freely throughout the day and especially for sleep at night. So-called mild toxemia may furnish us with a premature separation of the placenta or uterine apoplexy, one of the most dangerous complications one can encounter.

SCALE

The scale is probably one of the most important instruments we have in our office practice. During the world war the incidence of eclampsia dropped to almost nothing in Austria and other central European areas due mostly to food rationing. This led to the publication of various articles advocating the control of weight as a means of decreasing the toxemia of pregnancy, the first of which was published in 1923. Since then we have seen a marked decrease in the number of cases in private practice. Most of the cases of toxemia are furnished by those women who gain too rapidly and too much. One may contend that the deranged physiology of the patient causes both but from the practical side one will decrease the number of severe toxemias by controlling the increase in weight. The normal weight for the individual must be compared with the average weight which she has maintained over a period of time in order to arrive at a figure one thinks represents normal for her. She may be fifteen pounds underweight or overweight when first seen. She should not weigh more than twenty pounds over her normal weight at delivery which means an average gain of one-half pound a week if she is normal to start with or it may mean that she must lose weight throughout her pregnancy. If the patient is average height and twenty pounds overweight when first seen she should be told to lose weight or at least she should not gain. This loss of weight will not affect the baby providing her diet is balanced and contains the necessary vitamins and minerals.

If she shows a marked increase in weight she should be told to lose it by her next visit, especially so during the last trimester. Give her menus of 1200 calories a day and epsom salts twice a week and eliminate or markedly decrease her use of sodium chloride. Also watch for edema. Excess weight without edema may not be dangerous but sudden edema in an overweight patient means the water has become free in the tissues and such a patient is apt to have convulsions, pulmonary edema, cyanosis and tachycardia.

BLOOD PRESSURE

Here in this country the upper limit of systolic pressure is 130. If the blood pressure rises above 130 and increases each visit the patient must be regarded as developing toxemia and must be examined more frequently. On the other hand if she maintains a blood pressure above normal and it does not increase at each visit and there are no other signs of toxemia then she may be treated as essential hypertension and not toxic. I have delivered one woman twice who's systolic pressure has always been between 170 and 180.

An increasing pressure is most important particularly where it increases five to ten mm. each visit. Also the basic pressure must be considered. If at her first eight visits she has a blood pressure of 100 to 106 and she then shows a pressure of 130 that is as important as one who has been running 125 and then gives a pressure of 150.

One can not say that the blood pressure is a more reliable test for toxemia than examination of the urine but it would seem that toxemia causes a rise

in blood pressure before it causes kidney changes sufficient to allow soluble albumen to pass into the urine.

If the blood pressure rises to 170 or above the patient is in grave danger and if it is allowed to remain at that level for any length of time the patient will be very apt to develop chronic nephritis regardless of the fact that she may not have convulsions.

LABORATORY

There is no need to do elaborate tests on urine and blood. The heat and acetic acid test for albumen is quite all right and single specimens of urine will furnish the evidence one wants.

In addition to this a microscopic examination of both non-centrifuged and centrifuged urine should be done and in severe cases one should always look for acetone and diacetic acid. These are all procedures that can be done in one's office or even at the bedside and with very little equipment. One may be inclined to become a little careless at times after testing many hundreds of specimens for sugar because very few diabetic women concieve and there are very few people that are diabetic but who are not already aware of their condition. Most cases showing any reduction are cases of renal glycosuria. However, one should test for sugar because it has been found that if at about the fifth or sixth month one finds a positive test for sugar, that individual may be the one who will later furnish a case of pre-eclamptic toxemia. One must always bear in mind that toxemia is a generalized disease and that the toxin eventually affects every organ in the body especially the kidney.

Blood chemistry is of very little value in helping us to decide to keep or terminate the pregnancy. One can make as good a decision without it as with it and in some cases a better decision is based alone on physical findings, blood pressure and urine analysis. The only reliable blood chemistry is the uric acid determination and we should not burden the patient with unnecessary expense nor should we burden the laboratory with unnecessary procedures. Research work in this problem should proceed in institutions equipped and properly staffed to do it but at present the practitioner should wait until our knowledge has increased far beyond where it is now before attempting to use blood chemistry.

FOOD

The quality of the diet may not be the most important factor but certainly the quantity is of great importance. Most pregnant women eat too much. Only a few must eat more than they are accustomed to. The old adage "the pregnant woman must eat for two" was thrown out long ago by a great deal of evidence to the contrary.

Each individual must be considered separately and her basal rate and physical activity taken into account, but I have found that most of my patients get along very well on 1500 calories a day and a few of them must eat only 1200. They are asked to regulate their own weight gain allowing themselves only one-half pound gain a week providing they were normal at their last examination. If they were overweight then they must lose or stay the same until their weight is what may be called normal for that period of gestation. The patient should weigh herself at least every other day. The injestion of sodium should be kept at a minimum.

The patient should not use salt at the table and if she shows signs of toxemia she should use no salt at all. Sodium bromide and soda bicarbonate should also be eliminated. In some cases where salt is restricted for any length of time the patient should be given two and one-half grams of potassium chloride a day in order to maintain a proper chloride balance. Excretion of sodium chloride is impaired during pregnancy but here again one can determine the NaCl in the urine in one's office laboratory. It should run two to three grams per day or less.

If toxemia develops it becomes necessary to administer glucose but this can be done just as effectively at home as in the hospital. Glucose by mouth is more effective in most cases than by vein or subcutaneous injection because it goes directly to the liver through the portal circulation. Long before severe symptoms develop the patient is told to buy Dextrose or Dyno and to measure out eight level tablespoons each morning and to see to it that that amount is consumed by night. She may use it in place of sugar or eat it as such.

As for protein one must be careful to advise its reduction only in cases where liver involvement predominates and not where there is marked edema and albumenuria. Quantitative albumen tests are easily done in one's office; for example, if the patient shows as much as ten grams of albumen she should be given as much as 150 grams of protein a day. The average pregnant woman requires a general diet of about seventy grams of protein, eighteen grams of fat and 350 grams of carbohydrate which is equivalent to about 1800 calories but as stated above she may need much less if she is overweight or signs of toxemia have developed. The general diet should be maintained including proteins until some definite indication for a decrease in protein is made such as one might find where there is hypertension, little or no albumen, reduction in urine, no edema and with headache and epigastric pain. Many patients with edema, albumenuria and moderate hypertension have in the past been made worse by the old adage "no meat or other proteins." Some patients, however,

should have their proteins reduced the last six weeks of pregnancy when there is some retention of nitrogen but it should not be eliminated entirely.

The average pregnant woman does not need to drink any milk unless she likes it and can digest it easily. About twenty per cent of all adults can not and should not drink milk. About 125 different foods were recently tested in one of our leading clinics as to their being the cause of gastric distress after eating. Five hundred patients were questioned and the three foods ranking highest as the cause of gastric distress were onions, cabbage and milk. The emptying time of the stomach in adults on a whole milk diet is about four hours whereas with a general diet it is only about three hours. A well-balanced diet with sufficient variety will furnish the patient with all of her various needs. If after careful examination and study it seems advisable to furnish the patient with additional calcium, iron or vitamins they may be administered in whatever form seems best. The routine use of these additional dietary elements is not looked upon as being good medical practice and may constitute a considerable increase in the financial burden placed upon the expectant mother and her young husband.

Just when a pregnancy should be terminated in order to avoid risking the mother's life or to avoid some permanent impairment to her health, such as chronic nephritis, requires long experience and good medical judgment. Consultation with someone equal or superior to the physician in charge should always be sought before attempting to empty the uterus if the toxemia becomes severe. Certainly we have no right to risk the mother's life unless she with full knowledge of her condition insists upon it. She may and does in many cases carry her next baby to term without becoming toxic.

Five doctors signed the Declaration of Independence. We doubt if one physician in ten thousand can name the five who signed this patriotic document. Not one in a hundred can name more than one member. We reproduce the five names in order that you may add them to your book of knowledge: Joshua Bartlett and Matthew Thornton from New Hampshire, Oliver Wolcott from Connecticut, Lyman Hall from Georgia, and Benjamin Rush from Pennsylvania. —Ill. Med. Journal.

According to provisional figures released by the State Registrar, Kansas births decreased 1,103 in 1940, as compared to the 1939 total, since 29,765 births were reported in 1939 and the provisional 1940 total is 28,662. There was one less death in the state last year than in the previous year—18,528 in 1939, and 18,527 (provisional) in 1940. Marriages increased markedly — with 22,333 in 1940, as compared to 19,630 in 1939.

TETANUS*

J. W. Randell, M.D.

Marysville, Kansas

This brief survey will cover three successful cases of traumatic tetanus treated at the Randell Hospital. If this paper stimulates even a little interest in the better treatment of wounds, the early use of prophylactic serum, or the early diagnosis of tetanus, I will then feel that my feeble effort shall not have been in vain.

Tetanus, a reportable disease in Kansas, was described by Tyson in 1896, as an infectious disease characterized by tonic spasms repeating themselves with increasing severity. I have never seen a better definition than this. The more acute the disease the higher is the mortality. This observation was made in 1859, by John Erichsen of Philadelphia.

During the Civil War the mortality was about ninety-three per cent in a group of over five hundred selected cases. At the close of the last century antitetanic serum was developed. This made a definite drop in the mortality rate. The cases treated during the World War (1914 to 1918) showed a mortality of sixty-five to eighty-seven per cent. I have known personally of eight cases of tetanus. Four of these patients died. The present mortality rate of tetanus in the United States is about seventy per cent.

CASE 1

White male aged three. Following the recovery of this patient the father, an attorney, summed up the case in the following words, quote, "All men belonging to the professional world are constantly confronted with problems. The doctor must know human nature and be able to see behind the veil of concealment. A laymen may be fearful that he has given the wrong home remedy or done the wrong thing. But by tedious questioning he may, when the patient is an intelligent adult, get a complete history which may lead to the seat of the trouble. To arrive at the seat of the trouble in a three-year-old child is difficult. It is then the duty of the parent to report intelligently all symptoms he may have observed. Following my son's illness I recall these symptoms:

1. The first day of the symptoms the patient was cross, irritable, nervous, and had a loss of appetite.
2. The next day the above symptoms were more pronounced, with exclamations in his sleep, and stiffening of his arms and legs.
3. The third day there was a fever, hardening of the muscles in the neck, back, legs, and pain in the back.
4. The fourth day of symptoms was an exaggeration of all the above symptoms with difficulty in swallowing."

*Presented at the 81st Annual Session of The Kansas Medical Society, Wichita, May 14, 1940.

This three-year-old boy was examined, Friday, November 30, 1937. While riding a tricycle several days before, he had fallen on the sidewalk. He complained of a pain in his back, right leg, and ankle. He was irritable and nervous. After an examination, the right ankle was supported with an adhesive dressing. He did not return until Monday, three days later. There was then more nervousness, the patient was more irritable, and walked with difficulty. The temperature was 102. On account of the history, it was deemed advisable to x-ray the spine. The film showed no fracture. In looking further for the cause of the trouble a dressing was removed from the right hand. The palm concealed a small infected wound. This wound was caused by a small splinter picked up while at play upon some farm machinery. The parent using a sterile needle had opened the wound a few days before. It contained a small amount of pus. This part of the history had not been given to the author by the parent. This resulted in the loss of three days time in making a correct diagnosis, and starting the proper treatment. A spinal puncture was made without delay. The spinal fluid was under much pressure. The fluid was clear. It was replaced by 10,000 units of serum. The wound was excised and 5,000 units of serum was injected in and about the wound in the right hand. The cell count of the spinal fluid was two. The removal of the fluid from the spine relieved the pressure and produced a quieting effect on the patient. After a rest of six hours, the patient was given 40,000 units of serum intravenously. A severe reaction followed. Six hours later the temperature, pulse, and respiratory rates were 103, 108, and forty-six. Twenty-four hours later 40,000 units of serum was given. There was less reaction than before. Six hours later there was more nervousness and restlessness. The third day 30,000 units of serum was given intravenously with considerable reaction. The fourth day 20,000 units was given intravenously. A chill of fifteen minutes followed. Two hours later the urine was voided involuntarily. The temperature rose to 105.2 degrees. The sixth day 10,000 units was given intramuscularly. The seventh day 10,000 units was given intramuscularly. This was the last serum given—the total amount of which was 165,000 units. Serum given intravenously was preceded by three minims of adrenalin chloride. The patient was kept quiet by the use of sodium amytal, grains one to two, repeated every four to eight hours. Glucose was supplied by vein and proctoclysis. The patient was dismissed on the tenth day.

CASE 2

Female age fifty-five. This patient fell on a sprinkling can, lacerating the soft tissues below both knees. The wounds were cleansed and sutured by her physician. No prophylactic serum was given. Five days after the injury the wounds were dressed. The wounds were under some tension, and the stitches were removed. On the seventh and eighth days the patient noticed some stiffness in the neck and jaws. On the ninth day she was given an immunizing dose of tetanus by her physician. There was difficulty in swallowing, and on the tenth day the patient entered the hospital. At this time she was unable to swallow water. Her temperature was 100. She was given 20,000 units of serum intravenously. Very little reaction was noted. Her temperature in two hours was 104.6, pulse 134, and respiration thirty-six. Twelve hours later 10,000 units was given intramuscularly, and an equal amount intravenously. Two hours later her temperature was 105.4, pulse 132, and respiration fifty-six.

During the first day in the hospital the patient was twitching and jerking at intervals. Twelve hours later the spinal puncture was made. The fluid was under more than normal pressure and was replaced by 20,000 units of serum. Two hours later the temperature was 101, pulse 112, and respiration thirty. The patient was still unable to swallow. There was an increase in the muscular twitchings. The patient talked with difficulty. The third day 10,000 units was given intramuscularly. This was repeated in twelve hours. There was less rigidity, and the patient could swallow. The fourth day 10,000 units was given intramuscularly. No serum was given the fifth day. On the sixth day 10,000 units was given intramuscularly. On the seventh day 10,000 units was given intramuscularly. No serum was given on the eighth day. On the ninth day 10,000 units was given into the muscle. This was the last serum given. The total amount of which was 120,000 units. By the tenth day the jaws began to open a little wider, and by the twelfth day there was less jerking of the muscles of the back. The patient could now turn her head a few degrees to the right and left, and could flex the neck a little. The tetanus symptoms cleared up rapidly.

On account of the heart and kidney complications, this patient was not dismissed from the hospital until the fifth week. With the exception of nervousness, her usual state of health has returned. On the basis of one to four there was an albuminuria of plus one on admittance. The medication consisted, for the most part, of nembutal grains one and a half given every six hours. Morphine sulphate was given every six hours. This drug was given on six occasions, using one-sixth grains per dose. Other measures as to the intake of food and fluids were the same as in the previous case.

CASE 3

Male, age twelve, was injured May 27, 1939. A rusty piece of wire pierced the tissues of the left foot. The wire penetrated the foot between the fourth and fifth toes. The wound was treated one day later by the family physician. No prophylactic serum was given. The wound was treated nearly every day for eight days when the physician noticed definite symptoms of tetanus and sent the patient to the hospital for treatment. The temperature was 99.6, pulse 106, knee jerks were increased, slight positive Kernig sign was present and equal in each leg. There was some stiffness of the neck and jaws. The mouth could not be opened widely. The patient walked unsteadily in a rather spastic gait. Under local anesthesia a lumbar puncture was made. The spinal fluid was clear, under tension, and was replaced by 10,000 units of serum. Under ethylchloride anesthesia, the wound was cleansed, infected tissues excised, and 10,000 units was infiltrated into the tissues in and about the wound. The wound was dressed and kept moist with a saturated solution of boric acid. An additional 20,000 units of serum was given intramuscularly. The second day, 40,000 units was given intravenously, with a definite reaction resulting. Oxygen was given for five minutes. Some chilling was present. The third day 10,000 units was given intravenously and 10,000 units was given intramuscularly. Twenty minutes later a re-

action followed which lasted twenty minutes. The temperature was 104, pulse 132, respiration forty-six. Twelve hours later the above doses were repeated. The patient was slightly cyanosed. The fourth day 10,000 units was given intramuscularly and 10,000 units intravenously with no reaction. Twelve hours later 10,000 units was given intramuscularly with no reaction. On the fifth and sixth days an equal amount of serum was given intramuscularly. This was the last serum given, the total amount was 170,000 units. The patient was dismissed from the hospital on the thirteenth day. Sulfanilamide had been given to toleration for the first forty-eight hours. Sulfapyridine had been given on the seventh, eighth, and ninth days on account of the condition of the tongue, throat, and upper respiratory tract. The patient's tongue, damaged by the teeth, had ulcerated. The sedatives used were nembutal one and a half grains every four to six hours, and a few doses of morphine sulphate, grains one-tenth hypodermatically.

OBSERVATIONS

Graphic charts made on the second and third cases, show a peak of T. P. R. the first forty-eight hours, with a gradual return of each to normal in ten to fourteen days. The highest temperatures were 105.2 and 107 degrees respectively, per rectum. On account of the danger of sudden convulsive seizures, a thermometer should not be put under the patient's tongue. The highest pulse rates were 134 and 150. The highest respiratory rates were forty-four and fifty-two.

Of the three cases the lowest white cell count on admission was 15,500 and the highest was 29,050. The youngest of the patients was three and the oldest fifty-five years.

There was less reaction to the use of serum intraspinally than intravenously. Under ordinary cases it is neither necessary, nor desirable to give over one dose of serum into the spine. Two of the cases showed no serum sickness. One case showed a small amount of it during the eighth day. For about one year after the recovery, the three-year-old boy ran high temperatures, and a rapid pulse with any minor type of illness.

Daily comparative notations on the degree of Kernig sign, flexion of the chin on the sterum, stiffness of the neck, and the range of the teeth separation, are of considerable value in determining the amount of serum to be used. These readings may be used as an index to determine the time to more safely diminish, or discontinue the serum. For the want of a better instrument to daily measure the degree of separation of the jaws, a smooth slender wooden wedge graduated in millimeters may be used. If the separation of the jaw will permit, an inside type caliper will give an accurate day to day reading.

It is desirable to change the position of the patient often for the sake of rest, as well as the prevention of chest complications. No use was made of Avertin or the ultra violet light. Sulfanilamide seemed to be an added burden to the one patient on which it was used; while sulfapyridine was a definite benefit in combating the upper respiratory complications. The patient should be in a perfectly quiet environment. Too much light in the room is irritating. It is important to have competent special nursing. These patients are mentally alert, and are amenable to the use of proper psychology.

SUGGESTIONS

1. Lay education to get the patient to consult the physician early for the proper care of wounds.
2. Removal of foreign bodies and all infected, or devitalized tissues from wounds.
3. Prophylactic doses of 1,500 to 3,000 units of serum to be repeated in three to five days in severe types of wounds.
4. Alertness on the part of the physician to recognize the early symptoms of tetanus.
5. Once the diagnosis is made, the body should be flooded with enough serum to neutralize the toxins of the tetanus infection, keeping in mind the danger of maximum doses given intravenously.
6. The importance of the use of adrenalin before and oxygen following the use of the serum intravenously.
7. Adequate sedatives should be given to promote rest and general measures taken to keep up nourishment and body fluids.
8. The desirability of further studies in the use of sulfapyridine for the upper respiratory complications of tetanus.
9. The necessity for the use of Tetanus Toxoid to establish life time immunity for students, rural and industrial peoples. Children should, after the first year, be immunized against tetanus as well as against other diseases.

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"The Southern doctor is a gentleman and a scholar.

"This fact was impressed on Louisvillians by the conventions of the Southern Medical Association which ended yesterday.

"With few exceptions conventions are pretty much standardized these days. The program consists of pleas for cooperation, speeches citing the need for legislation favoring the convening group, a resolution which says, in effect, tax the other fellow. There is a banquet, a reunion, a dance, much drinking. The group's secretary and one or two other dependable members do most of the work.

"The doctors were different. Their convention was more like a condensed post-graduate course in medicine. There was a sharing of professional knowledge from which not only doctors, but laymen will benefit."—From the Courier-Journal, Louisville, Kentucky, reprinted in the Journal of the Tennessee State Medical Society, December, 1940.

THE DIAGNOSIS OF THYROID MALIGNANCY

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Thyroid malignancy is seldom diagnosed preoperatively because it often simulates benign goiter and when the late symptoms do appear, making the diagnosis apparent, it is usually too late for effective radiation therapy or surgical intervention. The clinician and surgeon alike must suspect all nodular thyroids of being malignant in order that the hopeless state of inoperability may be forestalled.

A thyroid neoplasm, in its early stages of development, possesses certain characteristics which may be of value in making its recognition possible. The history is important and often more dependable than the physical examination. The rapid growth of a preexisting goiter, in patients past forty, or the sudden appearance of a tumor at that age, with no previous thyroid enlargement, are diagnostic signposts which should not be ignored.

Upon examination, malignancy usually presents a contraction of the sternocleidomastoid muscle on the affected side with a limitation or fixation of the tumor in its transverse mobility. However, this phenomenon is not in evidence if the tumor is located posteriorly. Involvement of one or both of the recurrent laryngeal nerves, with symptoms varying from hoarseness to complete aphonia is rarely seen in simple goiter, but is of distinct clinical significance in carcinoma.

The late manifestations of pain radiating posteriorly to the mastoid, tumor hardness with fixation and pressure symptoms of dysphagia and cyanosis are unfavorable prognostic signs which preclude the possibility of relief by surgery.

At operation a true thyroid neoplasm presents certain findings suggestive of malignancy even when cancer is unsuspected.

1. Highly developed vascularization in adenomata not associated with hyperthyroidism, may indicate malignant changes and frozen sections should be made during the course of the operation.

2. The muscles overlying a malignant thyroid are unusually pale in color.

3. If the operator encounters technical difficulty in dislodging a goiter, which seems to be "fixed" he should be suspicious of cancer for a neoplasm in its extension has a tendency to grow between organs rather than to displace them.

4. The presence of necrotic fluid in a thyroid, simulating an abcess is strongly suggestive of cancer and warrants an immediate biopsy, which should not, however, be taken prior to radical thyroidectomy because of the imminent danger of disseminating the growth and frozen sections should be made and reported during and not after the operation.

CLASSIFICATION AND PATHOLOGY

1. Papillary type of adenocarcinoma.

Presumably of lateral anlage, usually seen in young individuals. Often histologically essentially benign, but tending to undergo unmistakable malignant degeneration with capsule invasion and lymphatic metastasis. Apt to recur unless completely removed surgically. Only slightly radiosensitive. Makes up about thirty per cent of all cases.

a. Papillary adenocystoma—low grade malignancy.
b. Papillary adenocarcinoma—moderate malignancy.

2. Fetal type of adenocarcinoma.

The most common type of all thyroid cancers. Of mesial anlage. Seen at all ages but more prevalent between thirty-five and fifty. Presents extreme variability in histology, from embryonal solid tumors to tumors showing extensive cystic degeneration. Only regular criterion of malignancy is evidence of blood vessel invasion. May show capsule invasion. Is extremely resistant to radio therapy. Makes up nearly forty-five per cent of all cases.

a. Malignant adenoma — low grade malignancy.
b. Alveolar type of adenocarcinoma—moderate malignancy.

3. Epidermoid type of carcinoma.

Thyroglossal duct origin. An extremely rare form of thyroid tumor usually seen after sixty years of age. It is generally fatal running the course of epidermoid carcinomata. Its radiosensitivity corresponds to the degree of cell differentiation. Makes up one to two per cent of all cases.

4. Giant cell type of carcinoma.

Origin can usually be traced to preexisting adenoma. Characterized clinically by sudden rapid increase in size. Occurs in individuals fifty to sixty years of age and is almost certainly fatal within six to eighteen months; radioresistant. Makes up about eleven per cent of all cases.

a. Polyhedral cell type.

Enormous tumor giant cells with multiple mitoses, scant stroma, marked vascularity, often perithelial arrangement, much necrosis, extreme anaplasia, invasion of the entire gland, regional vessels and lymphatics. At times resembles extremely malignant forms of mamary cancer.

b. Spindle cell type.

Cases range from quite orderly pressure "spindling" of epithelial cells as seen in a rapidly growing fetal adenoma to fast growing tumors resembling fibrosarcomata with many tumor giant cells.

5. Small round cell type of carcinoma. Origin disputed. Occurs in two forms.

a. Compact type: Origin can usually be definitely traced to a preexisting type of adenoma. Made up of small round cells, resembling fetal type of epithelium. Shows some tendency to form acini. Invades the entire gland and blood vessels metastasizing by them. Occurs usually in individuals over fifty and runs a uniformly fatal course within a year after onset; often within three or four months. They are apparently extremely radioresistant. Histologically, the picture is a glandular replacement by small round cells. Often it is seen in association with areas of marked lymphocytic hyperplasia. Frequently there is associated acinar hypertrophy which confuses the picture with that of struma lymphomatosa or Hashimoto's disease.

6. Sarcoma.

The existence of true sarcomata is still open to conclusive proof, although certain cases of "spindle" type adenocarcinoma have been reported as fibrosarcomata and some of the small round cell carcinomata of the diffuse form arising from struma lymphomatosa have been held to be lymphosarcomata. The reticulum cell sarcoma, while extremely rare, is recognized as a pathological entity and may exist as such.

CLINICAL FEATURES

Fortunately the incidence of thyroid malignancy is low, occurring once in every 910 cases, for thyroid neoplasms all to frequently go undiagnosed and treatment is postponed until too late to effect a cure.

Thyroid newgrowths, unlike malignancies occurring elsewhere, are peculiarly individualistic in their radiosensitivity. Ordinarily highly undifferentiated and anaplastic tumors show a marked regression in growth when subjected to x-ray or radium emanation, but thyroid malignancy, regardless of cell differentiation, seems consistently radioresistant.

The combination of radical thyroidectomy, by block dissection, followed by concentrated radium or x-ray therapy, would in the light of this knowledge, produce the most desirable results.

Carcinoma rarely develops in a hyperplastic gland and consequently the syndrome of thyrotoxicosis is seldom associated with malignancy, for this reason the administration of iodine, preoperatively, is not only unnecessary but actually harmful, for it tends to accelerate the growth of the tumor. Pregnancy, worry and emotional stress are also factors which have proven injurious.

DIFFERENTIAL DIAGNOSIS

It should be recalled that two per cent of all nodular goiters eventually show malignant changes and that all adenomata, regardless of size, can become malignant or may be so from the beginning. Surgery in these cases is a valuable prophylactic measure and should be exercised at every opportunity.

1. Benign thick-wall cysts, may at times be mistaken for malignancy, the point of differentiation lying in the pathologist's report which should reach the surgeon during the operation.

2. Acute thyroiditis: Many rapidly growing carcinomas, accompanied by fever, chills and leukocytosis show a clinical picture like that of acute thyroiditis, but generally the rise in temperature is not so marked. In this type of neoplasm the prognosis is grave and surgery useless.

3. Chronic thyroiditis of the Hashimoto type occurring in women over forty-five years of age is often misleading, but the lesion never protrudes through the capsule of the thyroid which is bilaterally enlarged and has less vascularization than normal. The gland can be easily removed in its entirety and frozen sections establish the diagnosis.

CASE REPORT*

History: A white woman forty-one years of age consulted her family physician on February 21, 1940, complaining of difficulty on swallowing, hoarseness and intermittent pain in the region of the thyroid, which radiated to the base of the skull on both sides, but more especially on the right.

She first noticed an enlargement in her neck in February, 1939, but it gave her no trouble until November, at which time the tumor began to grow rapidly and produced pressure symptoms.

She is the mother of seven children, all of whom are living and well, the youngest six years of age. She had small-pox at the age of twenty-nine but since that time has been exceptionally well. She has had no previous operations and the family history is negative for cancer.

Physical Examination: Revealed a calm, well

nourished adult white female, who did not appear acutely ill. Temperature 98.8 degrees, pulse seventy-eight, respiration eighteen and weight 140 pounds. The eyes protruded slightly but there was no lid lag. There was a very obvious swelling in the neck about the size of a small orange, which was smooth in contour and was extremely resistant to touch. The tumor was "fixed" and could not be moved transversely. No adenopathy was present. The heart, lungs and abdomen were free from pathology. Rectal and vaginal examinations were negative and the superficial and deep reflexes were normal.

Laboratory Data: Blood count.

(1) H.b.—seventy-two per cent.
R.b.c.—3,720,000
W.b.c.—8,430
Differential count normal.

(2) B.M.R. plus twelve.

(3) Urinalysis—neg.

(4) Kline, Kahn and Wasserman reports—neg.

Tentative Clinical Diagnosis: Thyroid malignancy. Operation.

The patient was given three grs. of nembutal at six a.m., one and one-half grs of nembutal and an H. M.C. No. 1 at 7:30 a.m. and was taken to surgery at 8:30.

A collar incision was made under two per cent procaine local infiltration anesthesia and the skin was dissected from below upward forming a flap, exposing the pre-thyroid muscles which were pale in color and thinned out by stretching. They were divided transversely between muscle clamps in their upper one-third and were freed with difficulty from the underlying tissues.

The thyroid capsule was greatly thickened and was adherent to all adjacent structures, making it necessary to divide the right sternocleidomastoid muscle in order to expose the right lobe of the gland. What appeared, at first, to be the true thyroid capsule, proved to be a thick fibrinous exudate which was incised longitudinally and stripped back laterally. At this point, there was a free escape of gray, necrotic fluid which was under tension. The pyramidal lobe, which was hollowed out, resembling an abscess cavity, was of the consistency of gristle and came away in irregular pieces. Because of its friability the tissue could not be clamped or sutured.

The superior pole of the right lobe extended upward as high as the cricoid cartilage and then dipped posteriorly, and was dislocated with great difficulty. Vascularity was pronounced and as the operation progressed, increasing technical difficulties were encountered. A total lobectomy was performed on the right side along with complete extirpation of the pyramidal lobe.

The left lobe, which was only partially involved at its inferior pole was resected, leaving a thin layer of capsule. The right recurrent nerve, which was imbedded within the neoplastic mass was sacrificed in the block dissection. Two perforated soft rubber drains were placed in the thyroid fossae on either side of the trachea and were brought out laterally through the angles of the wound.

The skin was closed by a series of wound-clips and dry dressings were applied. A soft rubber sponge was taped tightly over the dressings for thirty-six hours for the purpose of eliminating dead air spaces and making pressure over the skin flaps.

Diagnosis at the operating table: Thyroid cancer. Pathologist's report.

Macroscopic Examination: The material consists of a number of irregularly shaped sections of thyroid gland, the largest of which measures thirty-five by twenty-five by twenty mm. The surfaces are all yellowish-brown in color, varying in shape, coarsely granular and nodular in appearance, soft and firm in consistency. Cross section shows soft, yellowish-granular appearing tissue, also a dense yellowish-gray somewhat friable tissue with scattered islands of mucinous-appearing tissue.

Microscopic Examination: Sections through the thyroid gland show a diffuse growth of highly anaplastic cells penetrating widely throughout a stroma which is hyalinized in character. There are very many atypical nuclear structures and hyperchromatic forms.

Another section through the tumor shows extensive necrosis and lymphoid tissue along one edge. The tumor is so highly undifferentiated that it is difficult to tell what its origin is but many of these undifferentiated cells are attached to a delicate reticulum which runs in between the cells in addition to a heavy reticulum seen in the other slides. The highly anaplastic cells and markedly deformed nuclei are found everywhere. Sclerosis also seems to be of neoplastic nature.

Diagnosis: Highly undifferentiated reticulum cell sarcoma.

Treatment: X-ray therapy was begun within twenty-four hours and 200 R units were given each day on alternate areas until the maximum of tolerance was reached. A total of thirty-nine treatments, between February 16th and March 26th, were administered, with an aggregate dosage of 6,800 R units.

Radiation had absolutely no effect on the growth of the sarcoma which had evidently metastasized to the reginal lymph nodes and mediastinum. Radium packs were not employed due to the financial status of the patient.

The postoperative course was relatively smooth until the second month when an unproductive asthmatic cough, with dysponea and cyanosis developed. Her condition became progressively worse and on May 5th the patient succumbed of asphyxiation. A postmortum was refused.

*We are indebted to Doctors H. O. Bullock, J. T. Swanson and F. C. Helwig for their assistance in the preparation of this case report.

SUMMARY

1. Ninety per cent of all thyroid malignancies arise from pre-existing adenomata.

2. Two per cent of all nodular goiters eventually become malignant.

3. Malignancy is seldom associated with thyrotoxicosis but when it does occur, the symptoms are usually mild.

4. Thyroid malignancy, because of its close resemblance to benign goiter, is difficult to diagnose preoperatively. However, the history and physical findings, are fairly characteristic.

5. At operation advanced malignancy presents anatomical alterations which are unmistakable.

6. Unlike malignant tumors, occurring elsewhere,

thyroid neoplasma fail to conform to the principle of tumor radiosensitivity because highly undifferentiated newgrowths seem to be uniformly more radioresistent than those showing less atypical cellular differentiation.

7. A rare case of reticulo-cell sarcoma has been reviewed.

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PNEUMOCOCCUS MENINGITIS IN A PATIENT AGE SIXTY WITH RECOVERY

CASE REPORT

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Until the advent of chemotherapy and the thirty-two types of rabbit antiserum, pneumococcus meningitis was almost universally fatal. Even with the use of these agents it is estimated by Hodes, Gimbel, and Burnett[1] that the mortality is still about fifty per cent. The disease is most often seen in children and young adults, but a few cases past middle life are reported. In reports available the oldest case with recovery was forty-nine years of age. It was thought therefore that the recovery of a patient age sixty would be of interest. Through the courtesy of S. M. Anderson, M.D., of Wichita, Kansas, with whom the patient was seen, the following case report is presented.

HISTORY

Mrs. M. G. A., white female, age sixty, was admitted to the Wichita Hospital, April 30, 1940, in a state of coma with the history that some ten days previously she had taken ill with an acute upper respiratory infection. Two days previous to admission pain in the right ear was complained of, and on the day before admission the ear had drained. There had been marked nausea and vomiting and severe headaches especially the day previous to admission, which was thought by the other members of the family to be due to food poisoning. The morning of the day of admission she had a very high temperature and lapsed into a comatose state.

The past history showed the patient had never had a serious illness and for the most part had enjoyed good health.

The family history was irrelevant.

PHYSICAL EXAMINATION

The patient was a well nourished, well developed, white female past middle age, obviously acutely ill. She was lethargic, could be aroused only with difficulty and did not respond to questioning. Marked dehydration was evidenced by the extreme dryness of the skin. The pupils reacted to light, the eye grounds showed no papilledema, and the vessels showed only moderate tortuousity and sclerosis. The extrinsic eye muscle movements were all present and there was no nystagmus. There was a purulent discharge from the right ear, and the tympanum was bulging. The tonsils were moderately enlarged but showed no injection. The teeth were poor showing need of dental repair and hygiene. The tongue was coated and dry but protruded in the midline. The neck was stiff, and forward movement of the head caused pain. The heart was normal in size and position, and there were no murmurs. The blood pressure was 140/80, and the pulse was 110, regular and of good volume. The lungs were negative to auscultation and percussion, and respiratory rate was thirty. The abdomen was slightly distended but soft, and no masses or enlarged glands were palpable. Pelvic examination was entirely negative, and there was no adenopathy. On neurological examination the only positive finding was stiffness of the neck, the Babinski and Oppenheim on both sides was absent, and the Kernig was not elicited. All the deep tendon reflexes were present, equal, and normal including the abdominal.

DISCUSSION

The accompanying table gives a resume of the patient's progress showing the grams of sulfapyridine administered, sulfapyradine blood levels urinary findings, hemoglobin percentages, white blood counts, spinal fluid cell counts, maximum temperature, maximum pulse, maximum respiration, and other pertinent laboratory data on the respective hospital days. The date of administration of anti-pneumococcus serum and date of blood transfusion is also shown.

The initial spinal puncture showed the pressure markedly increased and the fluid milky. With succeeding punctures the pressure decreased, and the fluid gradually became clear. Only the fluid from the first puncture was examined bacteriologically. It will be noted that no blood cultures are reported. Venipuncture for culture was attempted but failed due to the collapse of the peripheral veins from the marked dehydration. While culture of the discharge from the right ear showed the staphylococcus, the ear infection was thought to have been the portal of entry for the meningeal infection. Glycerine and phenol had been used in the ear before admission to the hospital which may have altered the bacteriological findings. It will be noted that the only significant urinary findings, other than those of the admission specimen, were crystals identified as sulfa-

Date	Gms. Sulfapyridine per Twenty-four Hours	Sulfapyridine Level (Blood)	Urine	Hb.	RBC	WBC	Spinal Fluid Cell Count	Max. Temp.	Max. Pulse	Max. Resp.	Other Laboratory Work and Therapy
April 30, 1940	3 gm.		Clear, straw, acid, 1.015, Alb.-.5 mm., Sugar-Neg., Blood-Neg. Few coarsely granular and occasional hyaline casts, pus 8-10 per HPF.			Diff: Seg. 66% Lymph: 14% Eo. 2% Stabs. 18%	11,350	104.8	110	30	Direct smear from spinal fluid showed many white blood cells and a few Gram positive cocci. Culture showed abundant growth with morphology of Pneumococci. Paracentesis of right ear, liberating small amount of bloody serum.
May 1, 1940	*3 gm. **1 gm. 3 gm.	7.3 mg.		82%	4,130,000	19,550		103	104	24	Pneumococci typed and identified as Type nineteen. 100,000 units Type nineteen anti-serum given I. V. Ear culture shows growth of staphylococci.
May 2, 1940	***2 gm. 3 gm.	10.4 mg.	Negative for blood	75%		18,250	2,400	103	108	22	
May 3, 1940	6 gm.	12.3 mg.	Negative for blood	72%		21,600	550	99.4	92	22	
May 4, 1940	6 gm.	12.7 mg.	Negative for blood Few sulfapyridine crystals.	69%		15,850	350	99.4	92	22	
May 5, 1940	6 gm.	9.2 mg.	Negative for blood	68%		13,000		99.8	94	22	
May 6, 1940	4 gm.	10 mg.	Negative for blood	65%		16,850	68	100.4	106	20	50,000 units Type nineteen anti-serum. B1. Wass. —Neg.
May 7, 1940	5 gm.	10.3 mg.	Negative for blood	63%		13,950		99.6	90	24	
May 8, 1940	5 gm.	10 mg. 6.2 mg. (Spinal fluid)	Negative for blood	63%		19,950	40	99.8	76	20	
May 9, 1940	6 gm.	8.3 mg.	Negative for blood	60%		22,300		99.4	96	20	
May 10, 1940	5 gm.	10 mg.	Negative for blood	62%		17,900	47	99.4	90	22	
May 11, 1940	5 gm.	10 mg.	Negative for blood Many sulfapyridine crystals.	64%		14,300		99.2	92	24	
May 12, 1940	4 gm.	10.1 mg.	Negative for blood Many sulfapyridine crystals.	63%		9,100	41	99	94	22	
May 13, 1940	4 gm.	9.6 mg.		62%		10,250		99.2	90	24	
May 14, 1940	5 gm.	7.5 mg.	Negative for blood	59%		11,250	32	99	100	20	
May 15, 1940	1 gm.	9 mg.	Negative for blood	57%		10,050		98.8	100	20	
May 16, 1940	Discontinued	2.1 mg.	Negative for blood Few sulfapyridine crystals.	63%		10,000	32	100	102	28	
May 17, 1940	4 gm.	.46 mg.	Negative for blood			11,050		99.8	108	24	
May 18, 1940	6 gm.	6.2 mg.				9,800	19	99.4	100	22	
May 19, 1940	6 gm.	9.2 mg.				7,350		99.4	88	20	
May 20, 1940	2 gm.	7.8 mg.	Negative for blood			5,900	20	99.4	86	20	300 c.c. blood transfused, indirect method.
May 21, 1940	2 gm.	2 mg.	Negative for blood	70%		6,700		99.6	80	20	
May 22, 1940	Discontinued	2.1 mg.	Negative for blood	70%		6,750	14	99	80	22	
May 23, 1940	3 gm.	0.72 mg.	Negative for blood	68%		7,850		99.4	80	20	
May 24, 1940	3 gm.	3.6 mg.	Negative for blood	70%		6,400	11	99.4	80	22	
May 25, 1940	Discontinued	5.9 mg.	Negative for blood	70%		6,850		99.4	80	24	
May 26, 1940	Discontinued	1.8 mg.		71%		7,700		99	80	20	
May 27, 1940	Discontinued			70%		9,050		99.2	82	22	
June 3, 1940	Patient dismissed after six days of normal temperature.										

*Dose vomited shortly after administration; dose repeated. **One-third vomited, remaining two-thirds taken and retained. ***Vomited, not repeated.

pyridine. The patient tolerated the drug well, and it was found that the blood level could be maintained at a desirable level at times without giving the recommended dose of one gram every four hours. The only evidence of toxicity to the drug was a moderate degree of cyanosis and a gradual fall in the percentage of hemoglobin. The level of the blood sulfapyridine was carried higher than is recommended in pneumonia. Hodes, Gimbel, and Burnett[1] recommend from ten to fifteen mg. per cent. They use the sodium salt intravenously when difficulty in securing this level is experienced by oral administration. No intravenous drug was used in this case. It will be noted that the spinal fluid level was checked on May 8, 1940, and found to be 6.2 mg. against a blood level of ten mg. on the same date.

Therapy other than given in the accompanying table was symptomatic in character except for repeated hypodermoclysis to combat the dehydration.

Subjectively the patient has no recollection of her first week of hospitalization. After the first week she complained of headache and a ticking noise in the right ear. Her headaches were so relieved by spinal puncture and drainage that she looked forward to having this procedure done. She was able to walk out of the hospital on the date of discharge. She has remained well since discharge and is in apparent good health with practically normal hearing in the right ear at the present time.

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"Charity is the eminent virtue of the medical profession. Show me the garret or the cellar which its messengers do not penetrate; tell me of the pestilence which its heroes have not braced in their errands of mercy; name to me the—practitioner who is not ready to be the servant of servants in the case of humanity—and whose footsteps you will find in the path of every haunt of stricken humanity.—Oliver Wendell Holmes.

VAGINAL DIPHTHERIA

A CASE REPORT

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Numerous authors have surveyed the literature on vaginal diphtheria in this and other countries. It appears to be an uncommon condition to be diagnosed. Most of the cases so far reported have been clinically sick and ran definite courses to death or recovery. Most were treated with antitoxin. Few cases existed alone without pharyngeal or nasal diphtheria. Statements are made that absorption of toxin is slow from the vagina and that local treatment has little effect. In very few cases was pathogenicity of the organisms reported.

Three cases are here presented that show unusual features as compared with the cases reported. The patients were all in one family and the story is best told in chronological order.

Child A, age eight, was taken suddenly ill one evening after supper. She had previously been well. The onset was heralded by increasing difficulty in breathing and within a few hours had progressed far enough to frighten the mother who called a physician. He suspected laryngeal diphtheria and sent the child to the hospital. On arrival there she was toxic and very dyspneic. Throat smears and culture were taken and 20,000 U. diphtheria antitoxin given in the vein. There was little relief from the toxemia, and none from the dyspnea so about midnight a tracheotomy was done. Her color improved and she became a little more comfortable, but about three a.m. she expired. Post-mortem examination was done next day and a diphtheritic membrane extending from just below the vocal cords to past the bifurcation of the trachea was found. There was evidence of myocarditis and necrosis of the adrenal glands. At this time the throat culture was examined and found to be a pure culture of diphtheria organisms.

The parents, three other children and six relatives who had been in contact with the case were contacted and all given 1500 U. of antitoxin, and throat cultures were taken. At that time the mother remarked that child B, an eight-year-old girl, had a vaginal discharge.

This discharge, she said, was very irritating but had been considerably less so. It had grown much more profuse in the few days preceding the onset of child A's illness. The discharge has been present off and on since early infancy. She has never been sick and she does not menstruate. There have been occasional exacerbations of the discharge, but none so marked as the present one. She had not had diphtheria immunization.

Examination revealed a muco-purulent discharge from the vagina, and on the labia and mons were about a dozen small, discrete ulcerated areas covered with necrotic membrane. The introitus was very red, the hymen was intact but admitted a very small

speculum. The vaginal mucosa was markedly inflamed and discharging muco-pus. The child was otherwise normal. On the next day the throat culture was reported negative, but the vaginal culture which was taken at the time of examination was reported as pure diphtheria culture. Guinea pig inoculation was done and the culture reported as pathogenic.

She was pput on local treatment as follows: Three times daily twenty c.c. of peroxide were instilled into the vagina and the child allowed to lie with hips elevated for thirty minutes. Moist boric acid compresses were used continuously to the ulcerations about the vagina. At night a capsule consisting of nine grains of lactose and one grain of citric acid was inserted high into the vagina and allowed to remain. Cultures were taken twice weekly of the vaginal secretions in the morning before treatment. At the end of three weeks the diphtheria had been replaced by a pure culture of staphylococcus. The local lesions had disappeared at the end of one week. After three negative vaginal cultures were secured the child was dismissed from treatment. She was then given a first dose of toxoid, which caused very little reaction, and three weeks later was given a second dose. The parents had steadfastly refused to allow the child to be taken to the hospital, and all treatment was carried out in the home.

One week following the second dose of toxoid a vaginal culture was made, and again it was reported positive. She was placed in the hospital this time and treatment started again. After two weeks, although still with a positive culture, she was allowed to go home, to continue local treatment.

Child C, a female, age six, was brought for examination and proved normal in every respect.

The mother was then examined and although she stated that she had no discharge, vaginal culture was done. This was reported as a pure diphtheria culture; guinea pig inoculation was done and the culture reported as pathogenic. In the history the mother stated that she had had diphtheria as a very young child and her baby brother had died of it at the same time. On further questioning she remembered that she had always had some vaginal discharge. Also, she noticed that when she felt poorly, the discharge was worse, but that after childbirth, for several months the discharge was not present and she felt much better.

Examination of her pelvis was negative except for slight erosion of the anterior lip of the cervix. She has a chronic gall bladder syndrome incidentally. Her throat culture was negative. Throat cultures on all members of the family have persistently been negative. The mother was put on the same local treatment as child B, and after a few weeks culture was reported negative, again with staphylococci as the predominating organism in the vaginal flora.

The family has been followed up to the present (eight months) with interesting results. On several occasions both mother and child B have had positive vaginal cultures, which however were nonpathogenic by guinea-pig inoculation. They have been given local treatment about once a week up to now. One may presume that the organisms now present are diphtheroids, but the possibility that they are attenuated diphtheria organisms is strong.

COMMENT

The treatment has postulated on the known cultural and biological characteristics of the organism. Antitoxin was not used and child B showed no toxic symptoms. It is stated in relation to pharyngeal carriers that antitoxin has no value and that only local treatment is indicated. Shick testing was not done because antitoxin had been given prophylactically and it was thought that this would interfere with the results of the test. It would be interesting to have further studies of vaginal flora with pathogenicity tests of the diphtheroid organisms in a large series of cases.

CONCLUSION

It must be concluded that the mother, and possibly child B, was a healthy vaginal carrier of the diphtheria bacillus. The route of transmission from mother to children can be only a matter of speculation.

RESULTS OF METRAZOL TREATMENT*

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The purpose of this report is to give the results of the treatment of two hundred and fourteen psychotic patients with metrazol, covering a period from December, 1937, to April, 1940. During the early part of this period many chronic cases were treated, while later the majority were of more recent duration.

The cases were not selected except as to physical condition, age and type of psychosis. All available patients were treated in the schizophrenic and manic depressive group except those having undergone marked deterioration. A written premit was obtained from the relatives after the danger and benefits had been explained. A careful physical examination was made, including an x-ray of the chest, before treatment was instituted. Later x-ray was done only when indicated. Cardiovascular disease was a definite contraindication and few patients over fifty years of age were treated.

Treatment was at first given three times weekly, but later changed to twice a week. All treatment was given in the afternoon and the noon meal was omitted. Sedatives were withheld and in some cases

*Presented before the meeting of the Missouri-Kansas Psychiatric Association, Topeka, April 24, 1940.

**Topeka State Hospital.

sodium bicarbonate was given. A ten per cent solution of the drug was used and given intravenously, as rapidly as possible, while the arms were held loosely by an attendant on either side of the bed. The initial dose varied from three c.c. to five c.c. depending on the weight of the patient. At the beginning of the seizures the mouth opens and at this time a mouth gag is inserted, which consists of a rubber door stop wrapped in gauze. If a convulsion did not occur as the result of the first injection within a minute or two an equal amount was again given and in the great majority of cases a seizure resulted. As treatment continued the dosage was gradually increased until a standard dosage was reached which produced a convulsion in that individual. This dosage ranged from six to seventeen c.c., the average about seven and one-half to nine c.c. If a seizure failed to occur at the time of treatment the patient became quite fearful and the mental symptoms were apt to be aggravated temporarily. The immediate reaction consists in most cases of a preliminary cough, followed shortly by the tonic phase with flushing, then by the clonic phase with cyanosis, later by relaxation and pallor. A period of apnea usually follows, which in almost all cases ends spontaneously. As the patient gradually gains consciousness excitement may occur and confusion is marked.

During the seizure numerous pathological reflexes are often observed as dilatation of the pupils, followed by contraction, conjugate deviation, positive Babinski, pilomotor reactions and involuntary emissions. In only one instance was a second convulsion observed in our series, and one patient had a delayed seizure about twelve minutes after administration of the drug.

The complications in this series consisted of three fractures, two of the neck of the femur and the other the neck of the humerus; one case developed broncho-pneumonia which was of short duration, following which treatment was completed; one patient injured the articular surfaces of the mandibulo-temporal joint, from which he has now recovered; and there have been numerous subluxations of the jaw, which were immediately replaced. There have been no fatalities.

The number of treatments has varied greatly; the greatest number given any one patient was fifty-one, the average probably about sixteen. Some cases cleared up after a few injections, and if treatment was discontinued there was in some a tendency to relapse, while in others, where the treatment was continued in spite of the improvement, relapses occurred. However, for the most part the improvement was gradual, especially in the dementia praecox type. In the manic depressive type the response was more rapid.

In several cases where no improvement occurred during or immediately following treatment there was apparently a delayed reaction in which the patient improved, and in some instances had a complete remission. However, these may have been spontaneous recoveries.

During the first six months the shock method of treatment was used in this hospital, very little psychotherapy was given. Subsequently, however, metrazol treatments were supplemented by this form of treatment. Psychotherapy has consisted in giving greater personal attention to the problems involved in the psychotic break. In some instances, when expedient, bedside conferences were carried on as soon as possible after the metrazol shock. It has been found that often at such times better access could be gained to the psychological difficulties involved in the disease. Such investigations have then been followed up with more extensive private conferences. In other instances only the spontaneous statements and actions of patients have been noted during return to consciousness and then later used as possible points of reference in conference with these patients. In any event the establishment of rapport between patient and therapist seems often facilitated through the circumstances surrounding the shock treatment, and periods of lucidity sometimes following shock have offered good opportunity for constructive work.

Fear[2] of the treatment is nearly universal. Some of this can be alleviated by words and attitudes of reassurance. Restraint, although at times necessary immediately after the convulsive period, often creates great anxiety and confusion. Despite fear, patients have often expressed willingness to continue treatment on the ground that they were being definitely benefited. Whether fear is a major element in bringing about remission is not certain. One of our patients who had been brought to us in a stuporous condition later stated that after the sixth shot of metrazol he talked, frankly, because he was scared of the metrazol treatment and thought it was about time he talked.

Brevity of time will not permit the enumeration of many psychological observations[4,5]. Only a few will here be noted. One of the most common statements made by metrazol patients is to the effect that metrazol treatments cause them to become forgetful of the past. One patient complained that his thinking was not as keen and sharp as it used to be. Another patient, a depressed woman, having made unusually rapid recovery, complained that things just did not seem quite right now. Yet these patients and others making similar remarks were actually

gaining in insight and recovery, some of them rapidly. Could one possibly assume that what seemed to them a diminution of their clarity of thought was a rapid fading of their delusional systems to which they had been clinging so tenaciously? Schizophrenia, we know, is preeminently characterized by disorientation. Return to a feeling of orientation seems to be one of the outstanding results of shock treatment. This also holds true for the faculty of speech. Numerous patients, particularly schizophrenics, who had formerly been more or less blocked, have voiced pleasure in their ability to express themselves more freely in a verbal sense after having undergone a course of shock treatment.

Adherence to reality plays an important role in the individual's life. When patients are questioned regarding their first impressions upon emerging from the metrazol treatment they voice, among other things, a happiness in being still alive. Elaborating on this, they say that it is an agreeable feeling to see familiar objects and faces. One patient stated that he was glad he could soon smoke a cigarette. He went on to say that with the first glimpse of consciousness everything seemed confused but presently the room took shape, corners, doors, windows, beds and people took their proper shapes and proportions, this giving him a feeling of well-being. One of the commonest questions of patients upon awakening is "Where am I, who are you?" Recognition of the face comes earlier than that of a name. One often hears the statement, "It seems like a different world." Cohen[3] has given an interesting report on the resumption of cognitive functions after shock treatment.

A catatonic girl volunteered that whereas she used to be entirely preoccupied with her own thoughts and ideas to the point of considering them of greatest importance, she was now beginning to "pay attention" more to things and people around her. Another catatonic woman, who had been in stupor for a number of weeks, upon awakening from metrazol suddenly began to point out, and name with considerable elation the objects she saw around her: "Windows, trees, picture on the wall, snapshot on the wall, round ice cream box, the nurse, girl in the next bed, towel," etc., etc. Even when patients do not display marked behavior of this kind, it is not infrequent that one observes them in an exploratory frame of action of a visual, manual and auditory nature, hereby giving a possible clue that may lead us to a further understanding of the problem in question.

It has been exceedingly difficult to determine the number of seizures each patient should be given. In some instances in depressions there would be rapid improvement and if therapy was continued for a short time, there would be a tendency for them to become hyperactive, almost bordering on a manic phase. It has also been observed on several occasions in the manic type that there would be a definite improvement after a very few seizures, then if treatment was continued they would become very confused, with loss of memory. However, practically all of these cases recovered after metrazol was discontinued for a few weeks. As before noted, loss of memory has been a rather consistent post-metrazol finding. This appears to be only temporary.

In a few cases there has been a tendency for fairly rapid improvement followed by immediate relapses when treatment was discontinued, and again followed by remissions after a few convulsions. This would continue until several courses of treatment were given. Two cases are perhaps noteworthy:

Case I. This patient was a white girl, twenty years of age, a case of acute schizophrenia. She was excited, talkative, and uncooperative. After the first few treatments she showed but little change in her actions and behavior. After about the seventh metrazol treatment she began to show some improvement a day or two following seizures but before the next treatment was given would lapse back into her former condition. However, after two or three such reactions she sustained her improvement, and was able to be dressed and got along well on the ward. The treatment was then discontinued but she soon lapsed back into her former condition. Treatment was again instituted until she had thirty convulsions, at which time her condition again was fairly satisfactory, being up and dressed, cooperative, but showing little insight. However, about ten days after treatment had been discontinued she again lapsed back into her former state, being confused, excited, negativistic and delusional. She again received a short course of metrazol, having a total of three convulsions at this time. She again improved and was paroled home, and from recent reports is getting along satisfactorily.

Case II. The second patient was a thirty-six-year-old white female, in an agitated depression. Her improvement was slow with convulsive therapy and she received twenty-three treatments in the first series. She improved temporarily but again became depressed and agitated. She was then given another series of nine convulsions which again was followed by temporary improvement. This was continued until she had received four separate series of treatments, consisting of a total of thirty-eight seizures. During her last remission she was paroled home and apparently is well up to the present time.

RESULTS

We have graded our results into four groups, as noted in Table No. 1. The cases in Groups A and B represent either full remission or recoveries to the extent of home parole. Of a total of 214 patients treated 112 were in this group, representing 52.3 per cent. This, of course, represents cases of both long and short duration. These were then subdivided into type of psychosis and duration. Less than one

year was considered early and more than one year's duration was considered old. According to this classification there was 73.3 per cent remission in the early cases and only 29.5 per cent remission in the late cases. The per cent was raised some in the late group due to the comparatively favorable response of the old cases of depression. This is evident by the following data: Eighty-six per cent of the early manic depressive patients responded favorably and fifty per cent of the late cases, while in the schizophrenic groups sixty per cent of the early cases responded as compared to twenty per cent in the late group[1,6,7]. Patients that relapsed were classified with the failures. We have had four patients to return after a parole home. They likewise were recorded as failures.

TABLE No. 1

Diagnosis	Duration	No. Cases	Results A	B	C	C
Manics	Over 1 yr.	7		1	1	5
	Less	23	12	7	3	1
Depressions	Over 1 yr.	21	7	6	5	3
	Less	28	18	7	3	
Schizophrenia Hebephrenics	Over 1 yr.	9	1	1	1	6
	Less	8	3	2	2	1
Schizophrenia Catatonic	Over 1 yr.	48	3	8	6	31
	Less	38	11	13	9	5
Schizophrenia Paranoid	Over 1 yr.	15		1	3	11
	Less	6	1	4		1
Psycho-neurosis	Over 1 yr.	3	1	1	1	
	Less	4		3	1	
Schizophrenia Simple	Over 1 yr.	2		1		1
	Less	2			1	1
Totals		214	57	55	36	66

A—Complete remission
B—Good recovery, eligible for parole
C—Some improvement
D—No improvement

We have further summarized our total group into three series, representing three periods of treatment, (Table 2.). This we did in order to determine whether over a longer period of time improvement of results could be realized under our given conditions. The first series covers the first six months treatment was given, the second series the second six months, and the third series represents about the last year. The first two series were equally divided in numbers whereas the third series was as large as the first two combined.

TABLE No. 2

Showing series comparisons of all cases, old and early.

Series 1
63.6% Were Old Cases

A	B	C	D
21.8%	16.3%	16.3%	45.4%
38% A + B			

Series 2
41.8% Were Old Cases

A	B	C	D
36.3%	16.4%	18%	29.3%
52.7% A + B			

Series 3
46.5% Were Old Cases

A	B	C	D
25.3%	35.3%	14.1%	25.3%
60.6% A + B			

Summary of Series Comparisons of Early Cases

Series 1

A	B	C	D
35%	25%	15%	25%
60% A + B			

Series 2

A	B	C	D
59.4%	15.6%	18.7%	6.3%
75% A + B			

Series 3

A	B	C	D
37.7%	43.4%	13.2%	5.7%
81.1% A + B			

As noted in the tale, the number of A's and B's combined increased progressively from the first to the last series, even when only new or early patients were considered. This may possibly be accounted for by the fact that more intensive psychotherapy has been given the later groups. Also there may have been better selection of cases or improved technique. The exact factors and variables involved in the differences need further study. No complications have occurred for the past year, which includes all of the third series.

Considering all groups, the best results were obtained in the manic depressive class, and especially in the depressed individuals. The duration of the psychosis did not seem as important in the manic-depressives as in the schizophrenic group.

The results were especially poor in the schizophrenics of over a year's duration, while the percentage of recoveries and improvement was definitely better in the cases of recent duration. Our results with the paranoid type, especially the old cases, have been discouraging, although the number treated has not been great.

CONCLUSION

1. Although metrazol was first introduced as a treatment for schizophrenia, the best results have been obtained in the manic depressive group.

2. In the schizophrenic group the duration of the psychosis is important, as there is a very low recovery rate in the old cases.

3. Psychotherapy is a valuable supplementary aid to the convulsive treatment.

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THE PROBLEM OF THE PREMATURE BABY IN KANSAS

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A study of the causes of death of children less than one year of age, in Kansas, for the twenty-five year period 1914-1938, revealed the fact that prematurity accounts for a large per cent of such deaths, in each of the five-year periods studied. (Table No. 1.)

TABLE I

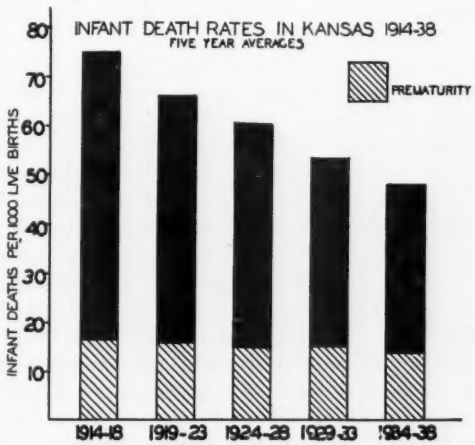
Deaths Due to Prematurity in Kansas 1914-1938

Five-year Period	Per Cent of Infant Deaths Due to Prematurity
1914-1918	23%
1919-1923	26%
1924-1928	27%
1929-1933	31%
1934-1938	32%

Further analysis showed that the infant death rate due to prematurity has not decreased materially during this twenty-five year period, whereas the general infant death rate has decreased from seventy-four per 1,000 live births in the five-year period, 1914-1918, to forty-seven per 1,000 live births in the five-year period, 1934-1938.

It is generally believed that the three most important factors in saving the lives of prematurely born infants are:

1. The maintenance of normal body temperature.
2. Adequate nutrition.
3. Prevention of infection.



Hoping to discover whether there were adequate facilities in the state to meet the first requirement properly; that is, the maintenance of normal body temperature, a survey of the hospitals was made to discover the number and location of incubators for premature babies. This survey showed there were twenty-seven home-made incubators, thirty-six incubators of commercial type, and one air conditioned nursery in the state. These facilities were found in thirty-four counties, leaving seventy-one counties without adequate facilities to care for premature babies.

During the eighteen months following the survey, the Kansas State Board of Health purchased eighteen electrically operated incubators and sixty-eight incubators operated by means of hot water. The eighteen electric incubators operate on 110-volt alternating current, and the temperature is automatically controlled. The sixty-eight hot water incubators are heated by means of fruit jars containing hot water, which are placed in a compartment beneath the bassinet. These incubators were placed in the areas of the state, where the greatest need appeared to exist, and with the understanding that they were to be freely available to any physician needing this type of service. When the distribution had been completed, each county of the state had at least one incubator. A list of the locations and custodians follows.

INCUBATORS FOR PREMATURE BABIES

ELECTRICALLY OPERATED

Location	Custodian
Colby	Geo. Marshall, M.D., County Health Officer
Oberlin	Mary Catherine Downey, R.N., County P.H. Nurse
Hill City	Barbara Ladd Smith, R.N., County P.H. Nurse
Smith Center	Smith Center Hospital
Oakley	Edith Stanforth, R.N., County P.H. Nurse
Tribune	D. J. Wilson, M.D., County Health Officer
Ulysses	Helen Nelson, R.N., County P.H. Nurse
Dodge City	St. Anthony's Hospital
Coldwater	Ruth Botts, R.N., County P.H. Nurse
Pratt	County Medical Society
Lyons	Mabel Hammerlund, R.N., County P.H. Nurse
Waterville	G. I. Thacher, M.D.
Hiawatha	R. T. Nichols, M.D.
Wichita	Henry H. Asher, M.D., County Health Officer
El Dorado	Roy Weathered, M.D., County Health Officer
Yates Center	Geo. R. Lee, M.D., County Health Officer
Independence	Mercy Hospital
Columbus	J. W. Spearing, M.D., County Health Officer

HOT WATER INCUBATORS

Location	Custodian
St. Francis	Mildred Williams, R.N., County P.H. Nurse
Goodland	Pauline Gerstner, R.N., County P.H. Nurse
Oberlin	Mary C. Downey, R.N., County P.H. Nurse
Hill City	Barbara Ladd Smith, R.N., County P.H. Nurse

*Division of Child Hygiene, Kansas State Board of Health.

Oakley.....Edith Stanforth, R.N., County P.H. Nurse
Hoxie.....Julie Colvin, R.N., County P.H. Nurse
Ulysses.....Helen Nelson, R.N., County P.H. Nurse
Cimarron.....Dorothy Noell, R.N., County P.H. Nurse
Dodge City.....Hope Blackburn, R.N., County P.H. Nurse
Kinsley.....Sarah Zeller, R.N., County P.H. Nurse
Greensburg....C. D. Updegraff, M.D., County Health Officer
Coldwater.....Ruth Botts, R.N., County P.H. Nurse
Grainfield.....Ethel Wilkins, R.N., County P.H. Nurse
Wakeeney.....Irene Mentlick, R.N., County P.H. Nurse
Johnson.....Hazel Ross, R.N., County P.H. Nurse
Syracuse.....Hazel Ross, R.N., County P.H. Nurse
Emporia.....C. H. Munger, M.D., County Health Officer
Yates Center.....Geo. R. Lee, M.D., County Health Officer
Columbus.....J. W. Spearing, M.D., County Health Officer
Marion .....John W. Turner, M.D., County Health Officer
Sublette.....Marion Cross, R.N., County P.H. Nurse
Atwood.....E. T. Gertson, M.D., County Health Officer
Sharon Springs..W. W. Carter, M.D., County Health Officer
Leoti.....L. S. S. Ott, M.D., County Health Officer
Dighto n.....Edwin P. Deal, M.D., County Health Officer
Almena .....T. F. Brennan, M.D., County Health Officer
Lakin.....G. R. Hastings, M.D., County Health Officer
Lincoln.....H. L. Songer, M.D., County Health Officer
Meade.....Gladys Hester, R.N., County P.H. Nurse
Hugoton....Lily Heinze Schreock, R.N., County P.H. Nurse
Lyons.....Mabel Hammerlund, R.N., County P.H. Nurse
Olathe.....Hazel Dobbs, R.N., County P.H. Nurse
St. John.....J. C. Ulrey, M.D., County Health Officer
Medicine Lodge.....
.....Hardin Gilbert, M.D., County Health Officer
Anthony.....C. A. Dieter, M.D., County Health Officer
Wellington.....L. A. Sarchett, M.D., County Health Officer
Soldier.....Mayer Shoyer, M.D., County Health Officer
Council Grove.....H. B. Melchert Hospital
Lyndon.....C. W. Beasley, M.D., County Health Officer
Cottonwood Falls..A. E. Titus, M.D., County Health Officer
Fort Scott.....W. S. Gooch, M.D., County Health Officer
Jetmore.....C. B. Wycoff, M.D.
Phillipsburg.....Phillips County Medical Society
Washington .....Washington County Medical Society
Elkhart.....F. H. Buckmaster, M.D., County Health Officer
Ashland.....W. H. Jones, M.D., County Health Officer
Belleville.....P. L. Beiderwell, M.D., County Health Officer
Portis.....Jas. W. Cross, M.D., County Health Officer
Luray.....H. S. Dreher, M.D., County Health Officer
Minneapolis....Edw. J. Haerle, M.D., County Health Officer
Bison.....N. W. Robison, M.D., County Health Officer
Larned.....C. M. Starr, M.D., County Health Officer
Severy.....S. F. McDonald, M.D., County Health Officer
Troy.....C. E. Waller, M.D., County Health Officer
Esbon.....S. B. Dykes, M.D., County Health Officer
Hiawatha.....R. T. Nichols, M.D.
Wamego.....Pottawatomie County Medical Society
Atchison.....Atchison County Medical Society
Valley Falls.....Jefferson County Medical Society
Leavenworth .....Jefferson County Medical Society
Burlington.....Coffey County Medical Society
Howard.....Elk County Medical Society
Fredonia.....Wilson County Medical Society
Sedan.....Chautauqua County Medical Society
Stockton.....Rooks County Medical Society
Alma.....A. A. Meyers, M.D., County Health Officer
Mound City.....L. D. Mills, M.D., County Health Officer
Paola.....P. A. Pettit, M.D., County Health Officer

It is hoped that this service may be of some assistance to physicians of the state in reducing infant deaths due to premature birth.

TREATMENT OF CEREBRAL PALSY (SPASTIC PARALYSIS)

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Etiology is not being considered, but the following facts should be made clear. Obstetricians have been too often unjustly blamed for a condition for which they have been entirely NOT responsible. Poor obstetrics does play a role, but only in the minority of cases. By far the vast majority are produced by causes which cannot be prevented at all. Therefore the term "birth palsy" is erroneous, unless it has reference to that condition involving the brachial plexus at birth, called obstetrical palsy. For complete and comprehensive information as to etiology the reader is referred to the excellent contributions of Ford, Heyman, Pusitz, Schrieber, and others.

Reference was made that in the majority of cases of cerebral palsy, the cause cannot be prevented. Therefore, there will always be a certain number of cases present in the community, year in and year out, depending, of course, on the number of deliveries. In a careful survey, I found that the number of cases of cerebral palsy exceeded that of infantile paralysis, except in years of epidemic infantile paralysis (as in this year). Phelps, in a rather scientific survey (in the East) found that the incidence was roughly about 140 cases per hundred thousand of population (the cases being under twenty-years of age). This at once indicates the importance of the problem from a socio-economic point of view.

Too frequently there has been misunderstanding of the term "cerebral palsy". In the earlier contributions, there was the tendency to group motor defective cases into two categories; those due to lesions of the lower motor neurone were flaccid paralyses, and those due to upper motor neurone lesion were spastic paralyses. Under the term "spastic paralysis" there were grouped a large number of different conditions, which were unrelated as far as spasticity was concerned. Although the earlier investigators realized the limitations of the term, and described athetoid and ataxic disturbances, it was not until the splendid work of Phelps that accurate differentiation was made. It may now be stated that under the term cerebral palsy are included a number of allied conditions, which present the attributes of spasticity, athetosis, ataxia, tremor, proprioceptive instability, etc. While these attributes may occur as pure syndromes, in by far the majority of cases, there is an admixture of these, al-

though one or other attribute may be more prominent, clinically. Spasticity is by far the commonest sign encountered.

A careful classification or differentiation of cases is important since the exact modus operandi in treatment depends upon it. However, there is a basic principle in the handling of the group, as a whole. It must be realized that we are concerned with the treatment of a motor defective child, whose mental status may be influenced by the motor handicap. This does not include idiotic cases, with or without motor defect. These have been thrown into this group by the profession without realizing it.

In the early history of this field, (and it must be realized that the condition was only first clearly defined in 1862), the work was mainly carried on by neurologists and pathologists, who were concerned mainly with etiology and pathological histology. As a result, a very pessimistic outlook was given to treatment. Gower's text book, in 1892, discouraged any form of treatment. Even to this very day, this pessimism and antagonism permeates medical research, so that there are only a handful of clinics in the entire country where complete treatment is being instituted. However, the profession, and crippled children agencies, are becoming interested. The manifold problems connected with each individual case are being realized—so that no longer does a positive encephalogram mean that the child is denied treatment, nor does a negative encephalagrom mean success. It is a question of the summation of the potentialities present in the C. N. S. which counts, as far as progress is concerned. Careful consideration of these factors will enable the family physician to refer the child to proper channels, and prevent the robbing of an unfortunate individual of his only chance for "freedom", or falling into the hands of the quack and charlatan.

The development of a routine in the treatment of these cases is the keynote in successful therapy —yet this is not new. About fifty years ago, Robert Jones stated, "It will be gathered from my remarks that I wish to urge that the treatment of spastic paralysis should resolve itself into a system. Such a system involves operative, mechanical and educational stages. The treatment cannot be separated into parts."

This satisfactory development lasted for some years, in which the interest in the condition shifted from the neurologist to the orthopaedic surgeon. But this routine was slow, methodical, and nonheroic. The orthopaedic specialist was rapidly becoming a surgeon, primarily, and there was not as yet the development of the fields of physiotherapy, muscle-education, occupational therapy, speech correction, etc., such as we have today. What was being sought was a short cut. The contributions which were made were excellent for the particular thing it had been invented. But too much emphasis was being placed upon an actual surgical procedure, and not enough upon the pre- and the post-operative routine—the "system" of Sir Robert. Small wonder then that the results were disappointing. There were so many brilliant results to be obtained by surgery in the fields of infantile paralysis, traumatic surgery, osteomyelitis, etc., that it was not enticing for the orthopaedic surgeon to remain too much concerned with "spastic paralysis".

Could Whitman still state, "Cerebral paralysis or palsy is in orthopaedic practice second only in frequency and importance to anterior poliomyelitis."? The everpresent tendency to seek some measure (with surgery, or with curare) with which the condition could be controlled "with one stroke" has hampered the progress made in this field, but yet there have been contributions which have elevated the field to a higher plane than ever before.

There has always been a tendency to consider all of these cases as idiots or of low mentalities, and particularly was this true of Gower's time. In 1935, Stevenson stated, "The one well known disease of the pyramidal tracts with little or no mental defect is Little's Disease." My own studies on a large group of unselected cases were that fifty per cent were of normal intelligence, five per cent were exceptionally bright, ten per cent or less were idiots or low morons, the rest being substandard or high moron individuals. It is interesting that the more recent and more complete survey made by Phelps gives good mental ability in 68.8 per cent of the cases he studied, thus producing similar figures to my own.

All through the work, it has been recognized that it is essential that the mentality be sufficient in order to make progress in the treatment of these cases. It remains for the neuro-psychiatrist to work out a useful method of measuring their intelligence, since this cannot be done with the ordinary methods of intelligence testing. Unless there are other stigmata, it is dangerous to prognosticate low intelligence in these cases until the second year of life. On the other hand, it is also dangerous to predict good mentality, particularly in the new born. Ford, Crothers, and Putnam cite the case of two babies born in the maternity wards of J. Whitridge Williams, who showed all the reactions of normal babies, including crying, nursing, and vigorous movements, who were found at necropsy to have

been born without cerebral hemispheres. They believe that the cortex plays no part in the normal activities of new born babies; but rather that these are reflexes mediated through the brain stem and spinal cord. It must be remembered that these cases have, from the very beginning, to cope with difficulties that the normal child knows nothing about. All these factors must be taken into consideration, as well as the motor defect, in the evaluation of the intelligence quotient.

The more recent trend back to the concept of Sir Robert Jones, of fifty years ago, has been due to the work of only a very few investigators, in various parts of the country. The work has been materially enhanced with the interest taken by the fields of physiotherapy, muscle education and re-education, occupational therapy, speech correction, etc. Phelps has probably done more than any one else to place the routine of treatment on a definite and standard basis. His classification and differentiation has been the starting point.

Phelps, Pusitz, and others have stressed muscle education, as the keynote in the routine, with other measures like surgery, curare, etc., as adjuncts. They have not neglected the neuropsychiatric approach, as is evident from their reports. Carlson, a neuropsychiatrist, has contributed to the concept that there has been too much stress placed upon physical development, and not enough on mental and educational development, in the treatment of these cases. He has pointed out that the spastic must be given a feeling of personal worth, before all these measures described can be of the greatest benefit in rehabilitation (this is a poor term). I have always felt that physical development was the keynote since we are essentially dealing with a motor defective child. What good would it be to produce a Ph.D. with a most brilliant background, if the patient could not make use of this training physically. It is true that there are mental aberrations and handicaps, but these are side issues. There is, however, very necessary a psychological approach in the handling of these patients since there are these mental deadlocks and handicaps, as a result of the physical barriers, as well as the environment of the child.

Phelps practices segregation of cases, and has a boarding hospital school for spastics, where a most complete routine, including education, is practiced. In 1932, Carlson developed a school for these cases, in the Neurological Institute of New York, which is run in conjunction with the Board of Education of New York City. In Kansas, such a school can only be for the future, certainly not the present, because of our smaller communities, and the lack of available funds. However, our own work has shown that a great deal can be done without these special units. Segregation of these cases, to prevent the development of mental deadlocks and barriers during the pre-school years, can still be practiced. This is done by means of out-patient clinics, which are the important center, and hospitals for the surgical and curare therapy. Whereas it would be a gigantic task to train nurses or parents to treat all cases, it is feasible, and I have found it very effective, to instruct a nurse or a parent in the treatment of a particular case. In this, however, there must be complete cooperation. Too frequently outside interference has resulted in the complete downfall of a routine of treatment of a particular case. Periodic check up must be performed by the neuromuscular specialist himself to obtain the best results. This is possible no matter how far away the patient may reside—peculiarly enough some of our best cases were those that had to travel hundreds of miles to our clinic.

Carlson stresses the segregation of these cases, during the school years. My own conviction is that this has advantages and disadvantages. The time to segregate these cases is in the pre-school period. This is a very vulnerable period, during which many mental behavior patterns are established. Moreover, there is a timing tendency in spastics as well as normals, so that they tend to learn to walk at a certain age, to talk at a certain age, etc. The longer this is delayed, the more difficult it is to develop these attributes later. Not only because of more difficulty in creating coordinated muscle function, but because these children develop improper modes of progression or action, in just the same way as a swimmer may learn incorrect strokes. It is much more difficult to teach the older individual the correct swimming strokes, since he has to unlearn all the incorrect ones. Another factor is that no matter how well the patient may get along in the special class, sooner or later he must go out into the world, and when he does he usually falls to pieces. If during this preliminary period, he were gradually subjected to the external environment, he could learn to cope with these problems, and become immunized to them. The pre-school period, in these spastic athetoids, is not until they reach the age of five, but seven or eight, or nine, depending upon the individual case, since their development cannot be as rapid as the normal, because of physiological limits to their progress. But sooner or later, they should be encouraged to "go to school".

Throughout the country, although sparsely, there have developed special schools, or clinics, or out-patient departments for these cases. During the last

year or so, the International Crippled Children Society has made investigation of these possibilities, and has gathered together much data. There is no doubt but that the future will hold more for the development of these spastic athetoids than ever before, and that this will become widespread.

CONCLUSIONS

There are no short cuts in the treatment of this condition. Since there is no possibility of regenerating dead nerve tissues, it is not a question of cure, but rather of palliation, endeavoring to produce coordinated muscle action so as to induce function. The treatment does not consist of any one particular item, but rather it must be considered as a routine of treatment (or a system of treatment as advocated by Robert Jones fifty years ago). In this, there is no heroic, no breath-taking procedure, but rather it is a slow methodical, and gradual process, in which many items, and from different fields, are required. The physician must develop a working hypothesis of coordinated muscle action, so that a well rounded routine of muscle education can be instituted. This must form the nucleus about which all the work evolves. Surgery, or neuro-surgery, as one, is not the treatment, but as adjuncts, they may be of inestimable value. Psychology or rather neuropsychiatry has a great deal to offer, but it has reference more with the approach to the spastic athetoid case, than to the actual treatment itself. Without it, however, the routine will suffer severely. We must avail ourselves of the wonderful opportunities we now have in the fields of speech correction, physiotherapy, muscle education, gymnastics, occupational therapy, etc.... But we must not lose sight of the fact that in order for these fields to give maximum results (without any tendency to exaggeration of their value), they must be controlled by the doctor who is well versed in the condition which is being treated. Educational and vocational guidance must be harnessed in this routine, so as to achieve the maximum results from therapy; although this objective will probably not be reached for some time.

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SPINAL INJURY (BULLET WOUND) ROLE OF EPIDURAL FAT IN PRODUCING NEURAL SYMPTOMS

REPORT OF TWO CASES

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Spinal injuries, followed by loss of motion, sensation and visceral function, usually present serious problems for diagnosis and treatment. This is especially true in case of direct traumatism and in injuries of long standing.

This report is intended to demonstrate a certain amount of benefit which was obtained by two patients who had been disabled by bullet wounds of the spine. The clinical course in the two cases was in some respects similar; in other respects strikingly different.

The fundamental problem in both instances was

the significance which was to be attached to the influence of epidural fat tissue, as a factor in producing dysfunction of the spinal nerves. This tissue is believed to be related to several clinical conditions, in the sense that it may produce a mechanical irritation of the nerves within the spinal canal[1,2,3]. Although it is considered a normal content of the epidural space, it has been found to undergo a variety of pathologic changes as fibrosis, inflammation and calcification. Coincident with, or following these alterations in the fat tissue, there is an encroachment on the nerves with which the fat and fibrous masses are in contact, and thus there results a variable amount of irritation of the nerve roots, intraspinally. The clinical manifestations from the effects of this irritation depend on the location and the extent of the involvement and the function of the nerves which are affected. Evidence of the action of such abnormalities is the relief of symptoms which follows surgical removal of these structures.

CASE REPORTS

Case 1. F.M., white female, age eighteen, entered the hospital in July 1937. Two years previously she was accidentally shot with a bullet from a .44 caliber revolver. The bullet, fired at close range, entered the lower part of the chest on the right anteriorly, coursed backward and lodged under the skin, immediately to the left of the midline at the level of the twelfth dorsal vertebra. The bullet was removed several hours after the injury and, at the same time, some shattered fragments of bone were removed from the spine at that level. The exact extent of the injury was not determined at the time, although the dura was known to be torn and probably the lower portion of the cord was damaged. After recovery from the immediate effects of the injury, there was complete loss of motor power and sensation in the lower part of the abdomen and back and the lower extremities. During the first six months after injury there was an incomplete restoration of sensation and also a slight recovery of motor power. Urinary and fecal incontinence resulted and persisted without much change.

From the time of the injury she had sharp pains referred to the legs and feet. During cold weather or on change of weather, she had constant severe pain of a dull aching character in both knees.

Due to muscle weakness of the back and lower extremities, the patient was confined to bed practically all the time. About six months previous to admission, trophic ulcers developed over the left buttock and the coccygeal region. Since that time there was noticeable a rapid decline in health, manifested by loss of appetite, anemia, loss of weight and a profound psychic depression.

Examination was unsatisfactory due to lack of cooperation on the part of the patient. Her mental attitude was plainly one of despair. Except for anemia and emaciation, nothing of importance was found on general examination.

Motor power in the lower extremities was completely lost except a fair degree of abduction and flexion of the left hip. There was also a marked loss of power in the muscles of the lower part of the abdomen and back, noted in efforts to turn or shift her position in bed. A flexion contracture of forty degees was present in each knee and both feet were contracted in a position of equino-varus.

Sensation was apparently normal in the thighs and there was complete sensory loss in the legs. This consisted of anesthesia to ordinary stimuli as touch, pain, temperature and pressure. It was of the "glove and stocking" type, the level of demarcation being on the right immediately below the knee joint and on the left approximately three inches below the knee joint.

Two ulcers were noted—one on the left buttock and the other over the coccyx. Both were typical decubitus ulcers, showing little tendency to heal and involving the entire thickness of the skin and subcutaneous tissues.

Roentgenographic examination showed that the spinous process and the upper half of the lamina of the twelfth dorsal segment had been removed. In the lateral view there was no indication of destruction of the pedicle, such as might be expected from the course of the bullet. In both views, numerous small shadows of the fragments of the bullet were visible. These were situated in the subcutaneous tissues or muscles of that area and apparently none were located in the spinal canal.

Urine examination showed albumin, one-plus, a few red blood cells and a few bacteria.

This condition presented many features of an incomplete lesion of the cord and nerves and yet was sufficiently extensive and well advanced that it offered little hope for improvement. The treatment which was instituted was undertaken largely at the insistence of the patient's mother. The operation was planned as an exploratory procedure, for whatever benefit might be obtainable.

Operation, July 13, 1937, consisted of removal of the first lumbar laminae and the remains of the twelfth dorsal laminae. Under each of these, the epidural fat was found to be interwoven with numerous strands of fibrous tissue. This fibro-adipose tissue was removed as completely as possible. Between the remnants of the twelfth dorsal laminae and the dura was a dense fibrous adhesion which was severed. In the upper part of this segment, the site of the injury, the dura was firmly adherent to the dorsal wall of the canal and it seemed useless to attempt any reparative work.

The report by Dr. C. A. Hellwig on the histologic appearance of the tissue was as follows: "The fat tissue is invaded by strands of cellular fibrous tissue. Many granules of hemosiderin are found."

Post-operative course. No important changes were noted immediately after operation. In the course of five weeks there was a gain in muscle power of the hips and the knees. The flexion contracture of the knees was corrected to twenty degrees. There was also a distinct improvement in the function of the bladder and bowels. Pain in the left knee was practically eliminated. Urine findings were unchanged.

During the next four or five months there was a gradual increase in power of the muscles of the hips and knees and lower part of the back. The function of the bladder and bowels was maintained in its improved state. The trophic ulcer over the coccyx was

healed and the ulcer in the left gluteal region had become smaller.

Motor power of the muscles in January 1938 was estimated as follows:

There was no muscle action in either foot.
Right knee: extension, poor; flexion, none.
Left knee: extension and flexion, good.
Right hip: flexion and abduction, fair; extension and adduction, none.
Left hip: flexion, good; extension, adduction and abduction, fair.

Urine examination on January 6, 1938 showed: albumin, one-plus; sugar, trace; indican, two-plus; many pus cells and bacteria.

Her condition, at this time, though definitely better since the operation, still represented considerable disability and she was anxious for further improvement if that were possible. It seemed reasonable to believe that the pathologic process in the spinal canal was more extensive than it was seen to be at the first operation and that therefore, it was responsible for some of the remaining symptoms. Accordingly another operation was advised.

Operation, January 7, 1938, consisted of removal of the laminae of the second and third lumbar vertebrae. The epidural fat contained numerous fibrous tissue strands and was in many respects similar to that seen at the first operation. The fat and fibrous tissue were removed as far as possible.

The tissue, on microscopic examination by Dr. C. A. Hellwig, showed "many small fibrous areas, many deposits of brown pigment and no inflammatory changes."

The results of this operation were a moderate diminution of pain in the right knee and an improved muscle action of the left knee, enabling her to correct the flexion contracture completely, without any further treatment. Further, the urine examination at intervals during the next year, showed no albumin and a marked improvement in the pyuria and hematuria.

In June 1938, while at home, an abscess developed over the coccygeal region. This opened spontaneously and a large amount of pus escaped, together with several fragments of bone. The opening remained as a large ulcer, extending to the sacrum. Formation of the abscess was accompanied by a rapid decline in health, manifested by anemia, emaciation and weakness. When she was seen in September 1938, she stated that she was too weak to attempt much physical activity. A large trophic ulcer extended to the coccyx and the sacrum and, in the roentgenogram, a destructive process involving both of these bones was visible. Her morale was favorable for recovery.

In December 1938, she stated that she had very little discomfort. Muscle function of the back and lower extremities was sufficient to enable her to sit in wheel chair most of the daytime. The flexion contracture of the left knee was estimated at ten degrees, that of the right knee at twenty degrees. Sensation was unchanged from the condition noted at the first examination. Bladder and bowel function were "practically normal." The decubitus ulcers were smaller and showed a tendency to heal.

In December 1939, her physician reported that she was gradually improving and that she had learned to perform various household duties by using a wheel chair.

Comment. The net gain in the patient's condition, approximately two and one-half years after treatment was begun, consisted of relief from pain, reestablishment of sphincter control of bladder and bowel, correction of albuminuria, improvement in pyuria and hematuria and partial restoration of motor function. In view of the extent and the nature of the original damage and the generally recognized gravity of this type of injury, the prognosis is uncertain.

Case 2. E.C., white female, age twenty years, was admitted to the hospital on September 4, 1937. Two years previously, while handling a .22 caliber rifle, she was accidentally shot, the bullet entering the right side of the abdomen and lodging in her back. This caused an injury to the spine and an immediate paralysis and loss of sensation in the lower extremities and lower back. An operation, performed elsewhere, consisted of removal of the bullet together with some fragments of bone from the spine which had been injured at the level of the second lumbar vertebra. There has, since then, been a partial recovery of motion and sensation in her lower limbs. She has had constant pain in her feet, more severe during a change in weather. Due to weakness, she has spent most of the time in bed and is able to sit up for only an hour at a time. Urination and defecation are difficult and require an abnormal amount of straining. Since the injury, menstruation has been accompanied by intense cramp-like pain which lasts for two or three days of every period.

Examination: Is unable to walk. Has very little muscle power in lower back. No tenderness of spine. The right thigh shows atrophy of one inch. The legs are equal in circumference.

Muscle action was present as follows:
Right hip: No flexion or extension; adduction and abduction, poor.
Left hip: All movements present but weak.
Right knee: No action in flexion or extension.
Left knee Extension and flexion, poor.
Right foot Weak flexion and extension of toes; no other action.
Left foot: Fair extension and flexion of toes; no other action.

Muscle tenderness was elicited in the right quadriceps extensor, gastrocnemius, and tibialis posterior, and the left tensor fasciae latae.

Sensation of the skin to touch, pain and pressure was disturbed on both sides, though not symmetrically. On the left, these sensations were normal above the knee, diminished between the knee and ankle, and absent below the ankle. On the right, sensation was normal above the ankle and diminished below that level. Sensory disturbance, in its distribution, was sharply delineated and was of the "glove and stocking" type.

The feet were cold and perspired freely. Tendon reflexes were absent. The right knee was contracted at thirty-five to forty degrees.

Roentgenographic examination showed that the laminae of the second lumbar segment had been removed. Small flakes of material, evidently fragments of the bullet, were scattered about in the tissues. In the lateral view, no destruction was seen in the pedicles.

Urine examination showed many pus cells.

Analysis of the findings indicated that, while there was an extensive involvement of the nervous elements, it was probably not a complete lesion of the cauda.

Many of the features which were noted left the impression that the nervous phenomena were the result of an irritative process. On this interpretation of the findings and on the basis of experiences with case one, an exploratory operation was advised.

Operation, September 10, 1937, consisted of a laminectomy of the twelfth dorsal and first lumbar segments. On the ventral surface of the twelfth dorsal laminae, several strands of fibrous tissue were attached and from there extended forward into the anterior part of the canal. These were under tension and were severed. At the lower half of the laminae, was a mass of epidural fat overlying the dura. Under the laminae of the first lumbar vertebra, several dense adhesions, extending between the bone and the dura, were severed. Under the remnants of the laminae of the second lumbar segment, the dura was adherent to the laminae by very heavy fibrous tissue. It seemed useless to attempt removal of these and they were left intact.

Examination of the tissue by Dr. C. A. Hellwig showed that "microscopically, the specimen consists of fat tissue. There are some fibrous areas with lymphocytic infiltration and deposits of brown blood pigment."

Following operation, several changes were noted in her condition. The pain in her feet was diminished in intensity and for a period of four weeks was entirely eliminated. Later there was a recurrence of the pain in mild form, not constant or severe and confined to the big toe in each foot. This pain has remained since the operation and represents very little discomfort.

Pressure tenderness in the muscles was eliminated and has not recurred.

Sensation to ordinary stimuli was improved in the legs and feet, though it is still subnormal. Most important in that respect is the recovery of deep pressure sense in the left foot to aid her in walking.

There was a definite improvement in the function of the bladder and no change in bowel function. Menstrual pain was not altered.

Motor function of the muscles was unchanged for approximately two months. After that time there was a noticeable improvement in the power of many of the paralyzed muscles in the back and lower exteremities. Three months after operation she began to bear weight and, with the aid of crutches, was able to walk without any further assistance. The contracture of the right knee was diminished to fifteen to twenty degrees without treatment.

Muscle power was estimated on December 2, 1937, as follows:

Right hip: flexion and extension, trace; abduction, fair; adduction, poor.

Left hip: all motions good.

Right knee: extension and flexion, fair.

Left knee: extension, good; flexion, fair.

Right foot: Inversion, poor; eversion, dorsiflexion and plantarflexion, trace.

Left foot: Inversion and plantarflexion, trace; eversion and dorsiflexion, poor.

The result was, therefore, an appreciable gain in muscle power of the lower extremities. This, together with restoration of part of the muscle function in the lower part of the back, was sufficient to enable her to walk with the aid of crutches. In walking she supports her weight only on the left foot, using the right foot to maintain her balance. She stated, in April 1939, that in this manner she can walk a quarter of a mile without fatigue. She is able to perform numerous household tasks, such as sewing and similar forms of work which can be done while in the wheel chair.

Urine examination at intervals has shown a correction of the pyuria which was noted on admission.

The results of treatment, nineteen months after operation, consist of diminution of spontaneous pain in her feet, elimination of muscle pain and tenderness, mild improvement in sensation of legs and feet, improved function of bladder and partial restoration of muscle function. With these changes there is also, as may be expected, a marked improvement in morale.

In December 1939, her physician reported her condition as being very satisfactory, stating that gradual improvement is still noticeable.

DISCUSSION

The visceral disturbances noted in both patients were undoubtedly due to dysfunction of the sympathetic nerves. Whatever change has resulted in visceral function is probably the effect of removal of a stimulating or irritating influence on the sympathetic nerves, whose function normally is an inhibition of the smooth muscle of the bladder and the intestine. Though neither patient regained normal function of the viscera, the improvement which followed operation was satisfactory.

The motor phenomena were, in their distribution and extent, such that they could not be attributed to interruption of function of the somatic nerves. This was evident both from the original motor involvment and also from the changes in motor power which followed operation. As the operation did not affect the motor fibers which showed the most striking changes, it would seem that the restoration of motor function was the result of reestablishment of autonomic nerve function, probably the sympathetic, which also constitutes the only neuronic system supplying the muscles, which was affected by the operation.

Analysis of the sensory effects shows a complete lack of conformity to the somatic nerve pattern in the lower extremities. In both cases the type of sensory defect was that of cross-section or "glove and stocking" anesthesia, which is commonly attributed to hysteria. In neither of the patients under study was there any reason to consider hysteria as an important factor. This form of anesthesia has been observed by Kahler in several kinds of vascular disease (peripheral arteriosclerosis, endarteritis obliterans, periarteritis nodosa) and was believed to be caused by poor blood supply in the terminal branches of peripheral nerves[4]. In the cases under study no change in the sensory findings was noted

in case one, and in case two the field of anesthesia was narrowed.

Subjective spontaneous pain was relieved in both patients. This was probably due to root compression or irritation. The pain was not dermatomic in its distribution and is most easily explainable as sympathetic nerve pain.

Trophic disturbances, as decubitus ulcers seen in case one, are common in spinal injuries and are generally ascribed to an upset of nerve function, although there is considerable controversary in regard to the system of nerve fibers which are affected. Asher and his coworkers maintain that trophic function is subserved in large part by the sympathetic nervous system[5,6]. Kure[7,8,9] claims that trophic function of tissues is regulated by the spinal parasympathetic nerves and that this is a specific and direct action of the nerves, without the intermediation of the blood supply. In case one, no benefit was obtained except temporary healing of the ulcer.

The nature of the operative procedure in both cases was such that any change in nerve function would affect only the nerve roots in their extradural course at the level of the operative field. No abnormalities were noted which could be interpreted as a compression of the roots of the cauda equina within the dural sac, unless such an effect was produced by the massive adhesions at the site of the original injury. These, however, were left intact and were therefore not influenced.

It seems justifiable to conclude that many of the neural manifestations which were encountered were caused by pathologic alterations in epidural fat, together with adhesions which were probably due to the original injury. It is reasonable to believe that the disorders of nerve function were predominantly results of sympathetic nerve dysfunction.

SUMMARY

A report is made of two cases of bullet wound of the spine. The injuries resulted in extensive damage to motor, sensory and visceral functions. Disability had existed for two years without much change. Treatment consisted of surgical removal of epidural fat and fibrous adhesions within the spinal canal. This was carried out in one case below, in the other above, the level of the original injury. The result of treatment in each case consisted of elimination of pain, a satisfactory though incomplete restoration of motor power and visceral function and, in one case, improvement in sensation. Analysis of the subjective and objective manifestations, before and after treatment, indicates that involvement of the sympathetic nerves was responsible for most of the clinical phenomena.

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TRAUMATIC ANEURYSM OF SCALP

Maurice A. Walker, M.D.

Kansas City, Kansas

Samuel S. Caplin, M.D.

Indianapolis, Indiana

Contusions of the head are common but arterial aneurysms occurring subsequently are extremely rare. In a recent review,* only thirty-four cases were found recorded in the literature since the year 1765.

REPORT OF CASE

One of us (S.S.C.), an intern aged twenty-seven, was called in the middle of the night. When he sat up suddenly, he bumped his head into a round metal rod on the bed. A large hematoma developed immediately in the left frontal region. This swelling gradually decreased during the next few days, leaving a fluctuant oval mass 1.5 by one cm., three cm. above the outer end of the eyebrow. The tumor pulsated with the heart beat. The skin covering this area was bright red. General physical examination was normal. Complement fixation tests were negative.

Eight weeks after the injury, using local anesthesia, a sac one cm. in diameter was freed from the surrounding tissues. A pulsating artery two mm. in diameter entered at each end. These vessels were ligated with fine catgut, the sac removed, and the skin closed with a subcuticular suture. Three years after the injury, only a fine scar marks the site.

*Winslow, N., and Edwards, M.: Aneurysm of the temporal artery. Am. J. Surg., 28:696-702 (June) 1935).

According to Science Service, the U. S. Navy is shipping to Cuba a new 500-bed mobile hospital that will be rushed to any outpost in the Western Hemisphere where American fighting forces may need hospital care. The staff will include thirty medical officers and 300 enlisted men of the Navy.

President's Page

To the Members of The Kansas Medical Society:

The success of post graduate medical education in Kansas, fostered by the State Medical Society, is dependent first on an active enthusiastic membership; second, good attendance and excellent scientific programs at state, county and sectional society meetings; third, on publication of well edited scientific articles in the Journal of The Kansas Medical Society; fourth, on specific programs for post graduate education arranged by special committees of The Kansas Medical Society.

These committees may contribute further to the health of the people of Kansas by programs designed to properly educate the general public concerning early signs or symptoms, treatment, etc., in certain disease problems. Surely the work of the Committee on Control of Cancer, with both professional and lay education, has contributed to the fifty per cent reduction in mortality from cancer of the skin in Kansas.

Recent United States Public Health Service reports show that Kansas is one of three states in which females live longest and one of six states in which males live longest. This longevity record surpasses that of any of the states advertising healthful climates.

Another index of the generally good health enjoyed by Kansans is embodied in the low percentage in rejections among young men of the State drafted for military service during the World War. Kansas ranked sixth in having the lowest percentages of rejections, exceeding by only 2.2 per cent the state having the lowest percentage of rejections.

These are facts of which Kansas may be proud. We of the medical profession may contribute toward making this record even better by continuing, developing and supporting post-graduate medical programs and programs of lay education.

Sincerely,

Forrest L. Loveland M.D.

President, The Kansas Medical Society.

EDITORIAL

PHYSICIANS FOR NATIONAL DEFENSE

As the national defense program gathers momentum and an increasing number of troops are assembling for training and military service the reality must soon penetrate the minds of the physicians of the United States that they are to furnish the personnel of the Medical Corps of this army. It is estimated that by early summer all of the medical officers belonging to the Reserve Corps in Kansas will be called into service. Beyond the Reserve Corps there will be many physicians needed. If sufficient number volunteer, induction of physicians will not be required. It is hoped that Kansas physicians will not wait for induction.

Whether we are in favor of military participation in the present war or not is beside the issue. Whether we consider ourselves essential to an institution or to the health of our community or to the welfare of our personal practice, which has perhaps been built up with considerable diligence and solicitude, is not the question which confronts the physicians of Kansas and of the nation. A program for national defense is under way and it is the duty of every physician who may be of service to his country to offer that service. If but a small proportion of physicians who should do so will volunteer there will be no need for a selective service order especially for physicians.

The question of medical personnel for the armed forces of the United States is an important issue which must be faced in the next few months and it cannot be regarded with indifference or considered lightly. The need is urgent.

AS A MATTER OF FACT

In the New York Times of December 17, 1940, Mrs. Roosevelt is reported to have said that the rejection of men physically not fitted for military service would "give impetus to the movement for a comprehensive and nationwide health program. The discovery of the need is the first step toward creating a demand . . . . the rejection of men for service dramatizes the need"*

A nationwide health program, comprehensive, well considered and planned, devoid of political considerations, based on demonstrable need and adjusted to the ability of the people to pay for it, would unquestionably have the support of the medical profession. Speaking throughout the Nation in 1940 Dr. Nathan B. Van Etten, president of the A.M.A., has said and reiterated: "In advocating a new health program, I believe that a National Department of Health with a Secretary of Health in the cabinet is as important as a War Department with a Secretary of War.

"Defense against disease is as important as defense against a military enemy . . . . " On the need for a new health program there is general agreement, and this JOURNAL advocates it and will support such a movement to the limit of its ability and influence. Mrs. Roosevelt says: " . . . .The discovery of the need is the first step toward creating a demand. . . ."* With this idea w ecan agree. But we must insist that such evidence as is adduced in support of the need be factual. If Mrs. Roosevelt will base her discovery of the need on Dr. Van Etten's statement: "Our mental unfitness is revealed by 500,000 hospital beds occupied by the institutionalized insane. Our physical unfitness by a half million active syphilitics," her discovery will be solidly based on fact.

But as to the state: "the rejection of men for service dramatizes the need," we can concede only that it is . . . . dramatic. For, on December 17, 1940, Colonel McDermott, director of the Selective Service in New York City, released to the press an analysis of the causes for rejections compiled by the Medical Division which gives the details of the medical causes for rejection by 120 local boards and the local induction centers. This sampling of registrants comprised 1,643 men of whom 1,213 were accepted for full military duty. There were 430 rejected as disqualified for full military duty or designated for limited duty only. For the information of our readers we publish herewith the causes for rejection of the 430 men:

Causes for Rejections	Primary	Secondary
Underweight	26	17
Overweight	11	12
Deficient height	2	1
Poor chest expansion	0	5
Defective vision	74	32
Chronic otitis media	19	4
Impaired hearing	4	9
Nasal defects	3	5
Infected tonsils	0	3
Speech defect	0	5
Insufficient teeth	88	20
Disease of gums	4	1
Deformity of jaw	1	0
Rheumatic heart disease	15	2
Valvular heart disease	30	7
Myocarditis	1	2
Hypertension	8	21
Tachycardia	3	12
Congenital heart disease	2	1
Hypotension	0	1
Enlarged heart	3	9
Systolic heart murmur	3	6
Angina pectoris	1	0
Hernia	16	9
Peptic ulcer	3	1
Hemorrhoids	0	10
Pilonidal sinus	1	1
Varicocele	4	6
Hydrocele	0	3
Disease of skin	1	1
Deformity of head	1	0
Deformity of spine	4	12
Loss of limb	4	0
Loss of toe or finger	1	1
Paralysis of limb	18	3
Defective joint	5	1
Deformity of limb	10	5
Varicose veins	2	7
Flat feet	1	16
Osteomyelitis	2	0
Hammer toe	0	1
Pulmonary tuberculosis	15	0
Chronic bronchitis	2	1
Bronchial asthma	1	0
Pleurisy	1	0
Spontaneous pneumothorax	1	0
Hemoptysis	0	1
Deformity of chest	0	3
Undescended testicle	2	1
Syphilis	6	90 (Positive Wassermann)
Doubtful Wassermann	0	26
Gonorrhea	0	1
Albumin in urine	0	2

We shall draw no conclusions from this sampling; we present it merely in evidence, marked Exhibit A, for study. As a guide, let us ask:

1. Does this sampling even remotely suggest any great need for a health program?

2. In the judgment of any competent physician do the rejections by cause indicate that more than a very small percentage of the defects could have been prevented by previous medical care or attention?

3. Are not the majority of the rejections due to causes beyond the help of medical care? Are they not of a kind which even the most extensive health program could not obviate?

If statistics as they become available from the rest of the Nation parallel this regional sampling, even the most expert dramatists will apparently be able to find little material for their art in the rejection of men as unsuited for military service. However, as they wait for further reports from Selective Service headquarters, may we call their attention again to the 500,000 hospital beds occupied by the institutionalized insane and the half-million people suffering from active syphilis mentioned by Dr. Van Etten? Surely here is stark tragedy enough to dramatize the need for an effective national health program without going further afield, but, if go they must, then how about the insane who are not institutionalized? Or, are there none here?—From the New York State Journal of Medicine, January 15, 1941.

CANCER CONTROL

EPITHELIOMA OF THE PENIS

G. B. Morrison, M.D.

Wichita, Kansas

Epithelioma is the most common malignant tumor of the penis. The vast majority of cases occur between the ages of forty and sixty, although a considerable number occur at a much earlier age. Epithelioma of the penis bears a definite relationship to pre-existing benign lesions of the glans or prepuce. Phimosis is the most important contributing factor, because of the associated balanoposthitis, but the disease may originate in chronic ulcers, in healed scars of traumatic or other origin, or may follow the common so-called venereal warts, or leukoplakia of the penis.

There are two important types of epitheiloma; the papillary or cauliflower, and the ulcerative. Incipient carcinoma takes the form of malignant trans-

formation in warty growths, as an eroded papule, or as a small ulceration.

Metastases occur primarily in the inguinal glands, and sometimes in the deep femoral nodes. Enlargement of the inguinal glands may result from a complicating pyogenic infection, and are indistinguishable clinically from metastasis.

The clinical diagnosis of early carcinoma of the penis is difficult, since the lesion may resemble a simple ulcer, a small wart, a syphilide, a tuberculous lesion, or possibly a chanchroid. If a definite diagnosis cannot be made by the usual laboratory tests, then a segment of tissue should be excised at the point of greatest induration for microscopic examination. If the early lesion is unmolested, it gradually increases in size and in time marked tissue destruction results. All varieties eventuate in ulceration and tissue destruction, the papillary type being slower in evolution than the primarily ulcerative form. All chronic vegatative and ulcerative lesions of the penis should be considered malignant until proved otherwise.

Untreated penile carcinoma is invariably fatal, although at times the process may continue over a period of several years. The best results from treatment are secured by a combination of irradiation and operation. Irradiation alone rarely controls the disease. The type of operation required depends entirely on the size of the primary lesion and the extent of the metastases.

TUBERCULOSIS CONTROL

TUBERCULOSIS—AN INTIMATE CHRONICLE

John A. O'Hale, M.D.

In 1932 the author discontinued medical school and entered a sanatorium with the diagnosis of moderately advanced tuberculosis. After more than six years of intermittent curing and working, it was decided to collapse the lung by thoracoplasty. Space permits only that part of the story which has to do with the operation. It was scheduled for a Thursday afternoon. The Monday of that week the patient entered the hospital for the routine laboratory tests. He forced fluids, did this patient, to the extent of three quarts a day and between meals he nibbled on a chocolate bar.

The morning of the operation arrived. The breakfast was a scanty one. The entire right side of the chest was shaved. But the event that he remembers most vividly is the enema, his first. He thought his intestines would break unless that eventuality were prevented by premature death from cramps. And he had prescribed enemata not knowing the sensation they produce.

Lunch consisted of six grains of sodium amytal. Soon he was asleep. Thereafter events grew hazy. He was awakened when the nurses came to dress him for the operation but the awakening was perfunctory. Faintly, he realized that one nurse was donning the boot-hose and another was sticking the hypodermic needle into his arm. He must have slept for he did not recall her extracting it. Nor could he remember anything of his transfer from bed to stretcher, the long ride from one building to another, down one noisy elevator and up another, nor the operation room itself. In fact, the next thing he knew he was back in his room, dusk had settled, a few friends were looking through the door and a nurse was beside him. He felt fine and fully awake.

Just then his doctor entered the room and in his bounding, cheerfully forceful way told him of the good result. "Four ribs practically entirely removed and the lung has collapsed nicely. You probably won't need any more surgery," he added.

That made the patient feel so well that he was tempted to climb over the side guards. The inclination was mental rather than physical and instead, he swallowed a little Vichy and was happy to retain it. Nine p.m. The visitors and well wishers vanished. The nurse pressed out the lights as she withdrew into the corridor, and he was alone.

Well! With nothing to do his mind wandered to his pulse and his fingers were not long in following. He couldn't count it; it was so fast and irregular. But he felt well. Maybe he lay there for an hour when he retched suddenly, forcefully and unexpectedly. He thought his lungs and abdominal organs had popped out through his subclavicular region. He learned then, without aid of a dictionary, what the term exquisite pain means. Strangely enough the wound on which he was lying didn't bother him at all then. For the few subsequent retches he braced himself and instead of having them explode in his chest they were eased over the pharynx with little discomfort.

That first retch seemed to be the signal for the pain to begin. First there was hyperaesthesia around the mouth, probably due to the tightness of the anaesthesia breathing cup. Next, all his teeth began to ache, and that's not hyperbole. They ached all through that first night. Later, his shoulder began to clamor for self assertion. He didn't sleep very well that night, and occasionally, with the assistance of the nurse, he would turn from back to side, or

vice versa, over the big bandage, and each time, try as he would to prevent it, the cautious maneuvering always ended in a thud as if he were rolling up or down a curb.

That first postoperative night he had a drenching sweat, and was quite worn out waiting for the dawn. When it came he slept for some three hours and felt wonderfully improved.

That day when the urinal was handed to him at various regular intervals he could void all right, but it was accompanied by no urgency, only by a sensation of numbness, and he couldn't predict whether he would void an ounce or a pint. The second night the sweat was only dampening. Thereafter they were absent or too mild to be noticed.

The first postoperative days during those few minutes each day when the patient was turned on his unoperated side, dyspnea was almost suffocating. He noticed none at other times.

Although there was some discomfort in the operated shoulder, the pain really didn't come in earnest until the third night. Then his back began throbbing in the region of the wound, and muscles that hadn't been incised were lame. About every half hour he would attempt to relieve the pain by changing his position. This produced more discomfort but little else; for, to the large bandage on his back was now supplemented a shot bag of the general size and shape of a rolled up Sunday newspaper. These two articles effectively kept him in his place.

The night wore on and he was feeling sick and irritable from pain and the lack of sleep; his former resolve to take no pantopon broke down, then and there. It was the first "hypo" that he ever received for the relief of pain. What a great drug it is. In a short time he felt comfortably warm and hazy, a delightful haziness. Gradually, an itchiness appeared all over his skin. He remembered promising himself that he would scratch it later, but before he got to it the night passed, nor does he remember having slept. That didn't annoy him because sleep would have robbed him of that pleasant hazy experience. It was as if, after much work, he had dropped exhausted on the bed, too tired to sleep, and had disintegrated into two people. The one who had pain was unimportant; the important, the conscious one was looking nonchalantly on and not minding it.

On the fourth postoperative day, a small three-pound shot bag was cradled in the right subclavicular region. It later was accompanied by a severe headache in the right frontal and occipital regions. The patient had never been subject to headaches, and the occurrence of headache after wearing that shot bag, and a larger one, was noticed too frequently to be mere coincidence. There was a relationship between them.

Saturday, two days postoperatively, he had his second enema. The following Monday he had his last. They confirmed his original opinion of them. They gripe—and that's not slang.

The big bandage was removed one week postoperatively, as were the skin sutures. The scar was a nice one. Naturally he was interested in trying to move his arm. There were definite weakness, soreness and limitation of motion, but he could move it surprisingly well. He roughly estimated it to have maintained about three-fourths of its normal function in all directions. Thereafter, each day, he grabbed hold of the steel bars at the head of the bedstead and worked his arm progressively further along it. Within a month postoperatively there were only stiffness and weakness, without any real limitation compared with the other side. Within six weeks all the stiffness had disappeared, and, except for definite weakness, the arm was quite normal. The weakness was especially marked when he held the arm out in front of him, particularly when he elevated it above the shoulder.

Four days postoperatively, with the aid of a toe hold on the foot of the bedstead, he was able to sit up unassisted, but he didn't feel quite well until ten days postoperatively.

Six weeks postoperatively the collapse as shown on the x-ray film appeared to be excellent and it was decided that one stage of four ribs was all that he needed. The following week he returned home (and with the aid of a diary began to write a few notes regarding the operation).

One day he dropped his pencil under the bed and in an effort to regain it had to get down on his knees and reach forward, upward and outward so that the scapula on the operated side was rotated far forward and elevated. He retrieved the pencil all right but the angle of the scapula somehow climbed over the fifth rib, and on its way back nestled inside the rib leaving him in little pain but greatly embarrassed. Slowly, he manipulated the scapula back into place. The scapula hasn't locked since, but when he hunches

SCIENTIFIC EXHIBITS — 1941 Annual Session

Application for space in the scientific exhibit section should be made to Dr. C. B. Trees of Topeka before April first.

The Committee is anxious to have a large number of exhibits by Kansas members.

IN 1541, Francisco Vasquez de Coronado sought the Golden City of Quivira. He failed to find the fabled city of gold, did discover Kansas and report to his Spanish king that here was a land with rich soil ideally suited to agriculture.

In 1941, Mr. and Mrs. America will re-discover Kansas—the state which has fulfilled the golden promize recognized by the Spanish explorer. They will find a great agricultural empire combined with a wealth and diversity of mineral resources. They will learn that Kansas manufactures from raw materials produced or mined within the state countless items essential to modern society.

Kansas will put on its best bib and tucker for the thousands of visitors this year. There will be special celebrations in recognition of the 400th anniversary of the first visit of the white man—nearly four score years before the Pilgrims docked the Mayflower at Plymouth Rock.

Special invitational literature on the state and its numerous attractions has been prepared by the Kansas Industrial Development Commission. These will carry the state's cordial invitation to Mr. and Mrs. America to visit Kansas in 1941.

THE KANSAS INDUSTRIAL DEVELOPMENT COMMISSION

STATE HOUSE TOPEKA

his shoulder far upward and forward he can still feel a bumping of the angle of the scapula as it goes over the fifth rib.

Before the right pectoral muscles had regained much tone he could place his fingers in the depression left by the excised ribs and feel the muscles on the pleural side of the scapula, and could push the scapula backwards. Now, six months after the operation, this can no longer be done.

As long as four months postoperatively, the patient could still feel very occasionally a vague pinching in the region of the scar and thought perhaps it was due to regeneration of the nerves.

Your chronicler hopes to continue to observe the result of this operation, and report more fully on its outcome after sufficient time has elapsed to properly evaluate its benefits and shortcomings.

From Tuberculosis Abstract, February, 1941. Tuberculosis—An Intimate Chronicle by John A. O'Hale, Amer. Rev. of Tuber., Nov. 1940.

NEWS NOTES

LEGISLATION

The osteopaths presented information, in regard to the bill in which they seek the right to practice medicine and surgery, (H.B. No. 1) at a proponent's hearing held on February 6 by the House Committee on Hygiene and Public Health. The Society presented information in opposition to the bill at a hearing before the same committee on February 10. No osteopathic bill has as yet been introduced in the Senate. The members of the House Committee on Hygiene and Public Health are as follows: Mr. Myron F. Robbins of Scott City, Chairman; Mr. W. C. Daugherty of Syracuse; Mr. John A. Holmstrom of Randolph; Mr. Homer E. Ira of Chase; Mr. Frank M. Kessler of Wichita; Mr. C. O. Lutz of Sharon Springs; Mr. L. W. Mahon of Yates Center; D. B. Fordyce, D.O., of Oswego, and K. A. Bush, D.O., of Harper.

Other bills of interest introduced to date are as follows:

Senate Joint Resolution No. 2. A resolution making an additional appropriation to the Vital Statistics Department of the Kansas State Board of Health. (This measure which was introduced by the Senate Committee on Ways and Means and which has passed both Houses of the Legislature makes additional funds available to the Kansas State Board of Health for the handling of the greatly increased number of birth certificate requests being received by reason of circumstances incidental to the social security and national defense programs.)

House Bill No. 8. A bill providing for the creation of a State Board of Naturopathic Examiners and providing for the licensure of naturopaths. (This bill was killed by the House Committee on State Affairs on February 12).

House Bill No. 25. An enabling act pertaining to the appropriation provided by Senate Joint Resolution No. 2.

House Bill No. 31. An act providing that chiropractors shall attend at least two days of post graduate work each year before they shall be eligible to have their licenses re-registered. (This measure was passed by the House on February 4 and was killed by the Senate Committee on Public Health on February 12.)

House Bill No. 41. A bill authorizing the issuance of bonds for the construction and equipment of a hospital in Russell.

House Bill No. 65. A bill forbidding the sale of fireworks.

House Bill No. 78. A bill providing for the construction and equipment of a hospital in Arkansas City.

House Bill No. 80. Same as Senate Bill No. 44.

House Bill No. 143. A bill authorizing the issuance of bonds for the construction and equipment of a hospital in Pratt.

House Bill No. 162. A bill providing for the payment of physicians bills for certain services rendered to the Crippled Children's Commission in 1932.

House Bill No. 201. An act regulating the sale of narcotics.

Senate Bill No. 39. Same as House Bill No. 78.

Senate Bill No. 44. A bill providing a new practice act for embalmers and funeral directors.

Senate Bill No. 77. Same as House Bill No. 88.

Senate Bill No. 85. Same as House Bill No. 94.

LOCATIONS

The calling of medical reserve officers to active duty has made available a considerable number of excellent locations in this state. In fact several of these are counties and communities which do not at present have a physician. The Society central office will be glad to supply all information possible on this subject to interested physicians.

The medical reserve corps of the United States Army, Navy and Marine corps also have a sizeable number of commissions open. The various corps area headquarters of these divisions will be very glad to correspond with all interested physicians in this regard.

MEDICAL RESERVES

It is believed that all members will be interested in the following letter received from Dr. R. E. Speirs of Dodge City pertaining to his active duty as a medical reserve officer. Dr. Speirs, a Captain, is at present stationed at Fort Des Moines, Iowa.

"My first orders stated that I should report somewhere on September 30th. That was all. In the meantime I hastily closed the office and disposed of household goods—By October 3rd nothing further had been heard. My disposition was suffering somewhat so a letter was written, (though never mailed), to corps headquarters inquiring for further details—Orders arrived on the 5th to proceed to a certain post on the 7th".

"Upon arrival at the post, report to post headquarters and while there sign the register. The Adjutant will tell each newcomer a few necessary things and either assign him quarters on the post or on commutation (living off the post). An extra allowance is made for the latter. He will then direct each officer to his immediate commanding officer, who maps out duties in a general way".

"Each new officer is allowed a day or two to establish himself and his family and sufficient time to procure a uniform. Because of the great demand for military clothing it is difficult to obtain and orders are filled slowly. The cost of a uniform ranges from

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one hundred and twenty to one hundred and seventy-five dollars. Just what to buy is difficult to say because the uniform is slowly being changed. For instance the campaign hat is out; the Sam Browne belt is only for dress. The essentials are a blouse, two pairs of slacks, Sam Browne belt, black neckties, tan shoes and shirts. One or two poplin shirts are needed depending upon how much the blouse will be worn and either two olive drab or two 'pink' or one of each, to be worn without the blouse. Before buying a garrison cap it would be well to find out its status as over-sea caps are replacing it. In the colder climates over-coats are an important item. Issue coats needing only the buttons changed, can be obtained from the commissary at a great saving. Before going to a tailor to be outfitted it is probably advisable to go to the post exchange. The post exchange does not carry the same quality in all garments that the tailor will have, but comparable articles will be much cheaper. Also they will not fit so well but the post tailor will alter them for a reasonable fee."

"It is essential that each officer and wife call upon his immediate commanding officer and the Post Commander within a limited time; some say within three and others ten days of one's arrival. This is a formal call, not to last over fifteen minutes, and to be made between the hours of eight and nine p.m. Formal attire is in order after five p.m. A tuxedo, a class A uniform (blouse, Sam Browne belt, white street shirt, black tie, slacks) or the 'Blues' may be worn. The officer leaves two calling cards as he is calling on both the commanding officer and his wife, while his wife leaves only one, as she calls on the commanding officer's wife. From time to time officers may call informally on those newly arrived. These calls must be returned within ten days."

"In so far as I know one's wife is expected to come with her husband unless specifically notified to the contrary. It still seems best to travel light; that is bring enough dishes for four people and the essential cooking utensils. The reason is that no one ever knows how long he will be stationed at one place. Those who bring their furniture have to worry about its transportation to the next place. The army will move it without charge but there is occasionally a delay. Quarters on the post are unfurnished for the most part. There are some old chairs, beds, desks and other pieces that can be obtained from the quartermaster. These certainly do not make it look like home, but it seems enough to me (an argumentative point in our family) . . . If the essentials can be packed in the car, all is well . . . "

"To reiterate travel light, for not infrequently twenty-four to forty-eight hours is all the warning one has before starting to another past."

CANCER PROGRAM

Arrangements have been completed wherein a post graduate course on control of cancer will be offered to physicians of the state through funds provided by the United States Public Health Service, and thru assistance of The Kansas Medical Society, and the Kansas State Board of Health.

Dr. George Thomas Pack, Assistant Professor of Clinical Surgery, Cornell University Medical College, of New York will be the speaker.

The course will be presented on six consecutive days in six well distributed areas of the state. All meetings will be held from five until seven and eight-thirty until ten-thirty o'clock in the evening, with the exception of the meeting in Wichita, which is to be held in conjunction with the spring clinical program of the Sedgwick county medical society. The time for the Wichita meeting has not as yet been announced.

Dr. Howard E. Snyder of Winfield, Chairman of the Society Committee on Control of Cancer has announced the schedule of meetings as follows:

Sunday—March 16	Lawrence
Monday—March 17	Chanute
Tuesday—March 18	Wichita
Wednesday—March 19	Dodge City
Thursday—March 20	Hays
Friday—March 21	Clay Center

NATIONAL CONFERENCE

The following program was presented at the fifteenth annual meeting of the National Conference on Medical Service held in Chicago on February 16:

VOLUNTARY GROUP MEDICAL CARE PROGRAMS

"The Second Year"—Mr. J. D. Laux, Detroit, Michigan.
"Why Are We Waiting?"—Dr. W. M. Hartman, Macomb, Illinois.
"What We Learned from the Wisconsin Experiments"—Mr. J. G. Crownhart, Madison, Wisconsin.

MEDICAL PREPAREDNESS

—Dr. Irvin Abell, Louisville, Kentucky.
—Dr. Morris Fishbein, Chicago, Illinois.
—Colonel Leonard Rowntree, M.D., Washington, D. C.
—Dr. Olin West, Chicago, Illinois.
—Dr. Roy W. Fouts, Omaha, Nebraska.

PRESIDENT'S ADDRESS

—Dr. Forrest L. Loveland, Topeka, Kansas.

STATE MEDICAL SOCIETIES' POST GRADUATE PROGRAM

"A Rural State's Program"—Dr. H. E. Snyder, Winfield, Kansas.
"As Carried on in Minnesota; A Cooperative Program"—Dr. W. A. O'Brien, Minneapolis, Minnesota.
"The Illinois Program"—Dr. Robert S. Berghoff, Chicago, Illinois.

LEGISLATIVE PROBLEMS

"Federal"—Dr. E. H. Cary, Dallas, Texas.
"State"—Mr. J. W. Holloway, Jr., Chicago, Illinois.

MEDICAL CARE FOR SOCIAL SECURITY CLIENTS

"Minnesota's Plan for the Care of the Medically Indigent"
—Mr. Walter F. Finke, St. Paul, Minnesota.
—Mr. Alfred W. Adson, Rochester, Minnesota.
—Mr. Walter G. Stumbo, Topeka, Kansas.
—Dr. Charles H. Phifer, Chicago, Illinois.
"The Annual Meeting from the Standpoint of the Exhibitor"—Mr. C. H. Wantz, Chicago, Illinois.

Dr. Forrest L. Loveland of Topeka and Dr. Harold M. Camp of Monmouth, Illinois, were President and Secretary respectively of the organization during 1940-41.

The following Kansas members attended the meeting: Dr. Forrest L. Loveland of Topeka, Dr. H. E. Snyder of Winfield, Dr. M. C. Ruble of Parsons, Dr. O. L. Cox of Iola, Dr. H. E. Haskins of Kingman, Dr. F. S. Hawes of Russell, Dr. J. E. Henshall of Osborne, Dr. J. F. Hassig of Kansas City. Mr. Walter Stumbo of Topeka, formerly an

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MEDICINE—Two Weeks Intensive Course starting June 2nd. One Month Course in Electrocardiography & Heart Disease every month, except August and December.

FRACTURES & TRAUMATIC SURGERY—Two Weeks Intensive Course starting March 10th and May 5th. Informal Course every week.

GYNECOLOGY — Two Weeks Intensive Course starting February 24th and April 7th. Clinical, Diagnostic and Didactic Course every week.

OBSTETRICS — Two Weeks Intensive Course starting April 21st. Informal Course every week.

OTOLARYNGOLOGY — Two Weeks Intensive Course starting April 7th. Informal and Personal Courses every week.

OPHTHALMOLOGY—Two Weeks Intensive Course starting April 21st. Informal Course every week.

ROENTGENOLOGY—Courses in X-Ray Interpretation, Fluoroscopy, Deep X-Ray Therapy every week.

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The Library of the Medical Department of the University of Kansas has every desire to be of service to the medical profession in the state. Any physician who wishes to avail himself of the facilities of the Library will be welcome both in the use of its periodicals, bound volumes of periodicals, and monographs and text-books.

Under certain circumstances, provided the volumes are not being actively used by the students, the Library will send such volumes as are needed to physicians in the state, on request, for a period of one week, provided carriage charges are paid both ways.

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1. Knight, F., and Shelanski, H. A., "Treatment of Acute Anterior Urethritis with Silver Picrate," Am. J. Syph. Gon. & Ven. Dis., 23, 201 (March) 1939.

*Silver Picrate, is a definite crystalline compound of silver and picric acid. It is available in the form of crystals and soluble trituration for the preparation of solutions, suppositories, water-soluble jelly, and powder for vaginal insufflation.

attorney for the Kansas State Board of Social Welfare and now personnel manager for the Topeka plant of John Morrell and Company attended as a guest speaker.

Drs. Ruble, Cox, Haskins, Hawes, Henshall, and Hassig also attended the thirty-seventh annual congress of Medical Education and Licensure which was held in Chicago on February 17 and 18.

KANSAS WOMEN'S FIELD ARMY

It is believed that the following information pertaining to the activities of the Kansas Women's Field Army for the Control of Cancer will be of interest to members:

Mrs. Donald Muir of Anthony is the State Commander, Mrs. J. E. Johntz of Abilene and Mrs. C. W. Hunter of Wellington are the State Deputy Commanders now serving.

The Vice-Commanders are: Mrs. C. W. Dannenberg of Hiawatha; Mrs. Hugh Whiteford of Kansas City, Missouri; Mrs. Joe E. Nance of Oswego; Mrs. T. F. Marbut of Emporia; Mrs. Tom Stewart of Wellington; Mrs. H. J. Adams of Belleville; Mrs. W. E. Davenporth of Salina; Mrs. L. Carl Cox of Quinter; Mrs. Dan Hopson of Phillipsburg; Mrs. W. E. Woodard of Kinsley; Mrs. Easton C. Bray of Syracuse and Mrs. Arthur E. Wurth of Ashland.

A regional assembly of the Women's Field Army was held in Kansas City, Missouri, on February 13 and 14. Dr. Howard E. Snyder of Winfield, a member of the State Executive Committee of the Kansas division, was a speaker at the meeting.

The enlistment campaign for membership in the Women's Field Army will be conducted in April. Membership in the organization is $1.00 of which amount seventy cents remains in the state and thirty cents is sent to the national organization. Hundreds of meetings have been held in the state during the past years as a part of the educational drive to reduce the mortality from cancer, the programs of which are under the direction of the Women's Field Army, the Society Committee for the Control of Cancer and the county medical societies in the counties the meetings are held.

TUBERCULOSIS SANATORIA

The Board of Directors of the Kansas Tuberculosis and Health Association passed the following resolution at a recent meeting:

WHEREAS, it is the belief of members and Directors of the Kansas Tuberculosis and Health Association that the Legislative and Executive Officers of the State of Kansas should have information in regard to the Tuberculosis situation in Kansas, and

WHEREAS, the Kansas Tuberculosis and Health Association, in connection with the Committee on Tuberculosis of The Kansas Medical Society, has made a study of the sanatorium facilities and the sanatorium needs of the State of Kansas, with the following conclusions:

1. Nationally accepted standards indicate that the minimum sanatorium facilities for any State should be two beds for each annual tuberculosis death, meaning 1050 beds for the State of Kansas, since our average tuberculosis deaths based on the five years prior to 1938 is 512.

2. There are at present, counting the new addition at Norton, approximately 650 sanatorium beds available in Kansas. This leaves a deficit of 400 beds to meet minimum requirements, one-half of which should be situated in the Southeastern half of the State. The other half of the increased bed supply should be near to Kansas City, Kansas, either at the Medical School or close enough to the Medical School to be used for teaching purposes. The public health needs of the State strongly dictate that one-half of these additional bed requirements should be provided at the coming session of the Legislature.

3. The public health problem of tuberculosis cannot be adequately met in the State without sufficient sanatorium beds and the lack of sufficient beds in the Southeastern part of the State is bringing unfavorable National attention to the State:

THEREFORE, BE IT RESOLVED that this Association in Annual Meeting of Board of Directors, December 30, 1940, petition the Governor of Kansas and its legislative bodies to provide through action in the 1941 Legislature for 400 additional sanatorium beds so that we may give prompt care to those of our citizens found to need treatment for tuberculosis.

Dr. C. H. Lerrigo, Executive Secretary of the organization, recently held a dinner meeting with the Ways and Means Committees and the Health Committees of the House of Representatives and the Senate, and certain other legislators for the purpose of discussing the resolution and Kansas tuberculosis needs.

POLIOMYELITIS

The National Foundation for Infantile Paralysis, which organization sponsors the annual "March of Dimes" campaign for assistance in programs pertaining to the study and control of poliomyelitis, announces in a recent report that it engaged in the following activities in the past year: Studies have been carried on through grants from the Foundation on problems of epidemiology, virus research, relationship of nutrition to poliomyelitis, and the prevention and treatment of the disease, with additional programs of professional and lay education.

In reporting on the distribution of the virus in the body all reports showed that the virus could be routinely recovered from the central nervous tissue of human fatal cases and from experimental animals, and that excepting for tonsils, adenoids and lymph gland tissue, no other part of the body was shown to harbor the infection. All attempts at producing immunity have thus far met with failure. Additional grants were recommended for continuation of existing studies and new investigations in the amount of $137,350.00.

SECTIONAL MEETING

March 10, 11 and 12 have been set as the dates for a Sectional Meeting of the American College of Surgeons in which the states of Minnesota, North and South Dakota, Iowa, Nebraska, Montana, Kansas and Wisconsin, and the province of Manitoba will participate. The meeting of this section will be held at Minneapolis, Minnesota.

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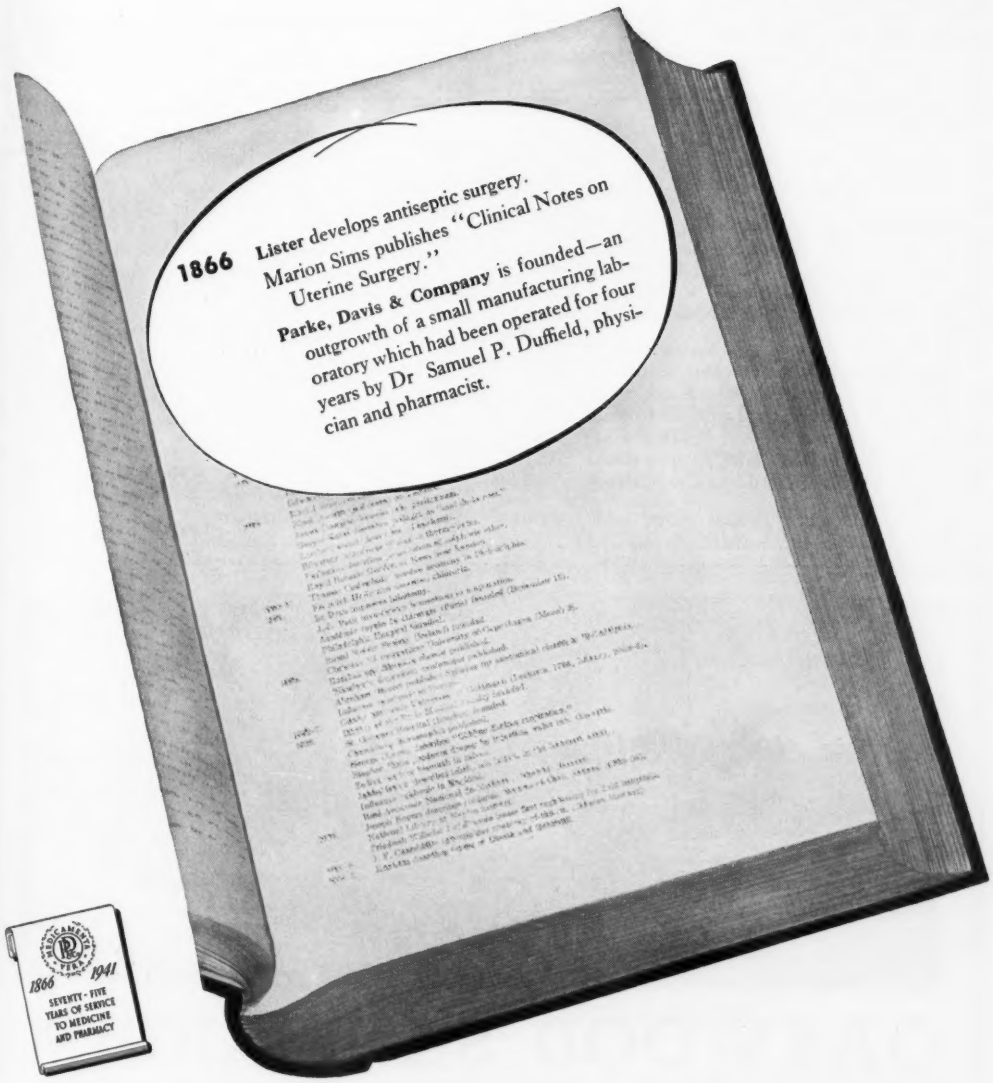
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The medical profession at large, as well as hospital trustees, superintendents, dietitians, and other hospital executive personnel, are invited to attend the sessions of the sectional meeting and the hospital conference, a sufficiently varied program having been arranged to interest members of the several professions which are concerned with service to the sick and injured.

COUNTY SOCIETIES

The Brown County Medical Society elected the following officers for the year 1941 at a recent meeting; Dr. Ralph M. Wyatt of Hiawatha as President; Dr. Fred G. Poutre of Horton as Vice-President; Dr. G. M. Edmonds of Horton as Secretary; and Dr. R. T. Nichols of Hiawatha as Treasurer.

The members of the Clay County medical Society were the hosts to the Golden Belt Medical Society at Clay Center on January 9. The meeting consisted of an afternoon scientific program and a dinner. Speakers were: Dr. John Lattimore of Topeka, Dr. Paul Stookey of Kansas City, and Dr. Ray M. Balyeat of Oklahoma City, Oklahoma.

The Franklin County Medical Society held a meeting on January 29 in Ottawa. Mr. Bert Winchester of the Farm Security Administration of Topeka spoke on "Medical Cooperation."

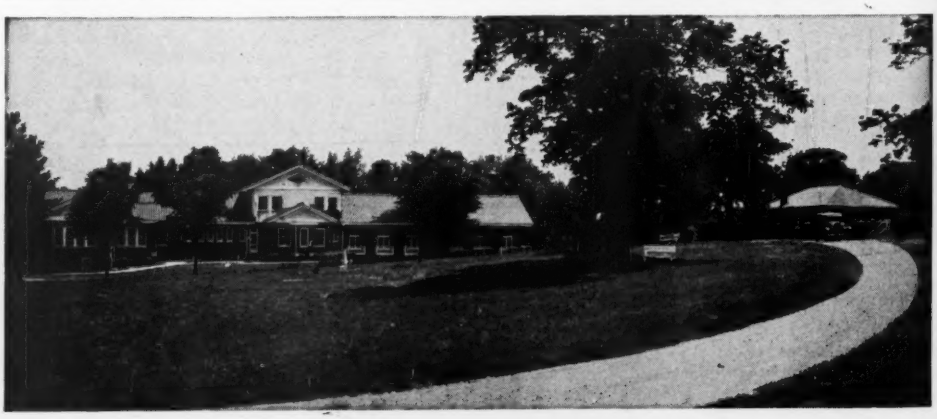
The Harvey County Medical Society met on January 6 in Newton. Speakers were: Dr. John W. Hertzler of Halstead who spoke on "Heart Disease" and Dr. James A. Wheeler of Newton who spoke on "Poliomyelitis." Dr. F. W. Koons of Halstead was elected as President of the society to fill the unexpired term of Dr. E. M. Harms who has recently moved to Blackwell, Oklahoma.

The Labette County Medical Society held a meeting on January 22 in Parsons. Dr. Hugh McGaughey and Dr. R. C. Newkirk of Joplin, Missouri, spoke on "Sulfathiazole." The following officers were elected for 1941 at the meeting: President, Dr. M. C. Ruble of Parsons; Vice-President, Dr. Charles Miller of Parsons; Secretary, Dr. I. Waxse of Altamont; Censor, Dr. J. T. Naramore of Parsons.

The Marion County Medical Society held a meeting on January 8 in Marion. Speakers were: Dr. R. R. Melton of Marion who discussed "The Use of Inhalator for the Administration of Oxygen and Carbon Dioxide" and Dr. W. M. Tate of Peabody who spoke on "Clinical Photography in Medical Practice."

The Miami County Medical Society met on January 8 in Osawatomie. Dr. E. E. Attick of Kansas City, Missouri, spoke on "Neuro-muscular Coordination."

The Nemaha County Medical Society held election of the officers for 1941 at a meeting held on December 17 in Seneca. Dr. Sam Myers of Corning was re-elected as President; Dr. Martin Rucker of Sabetha was elected as Vice-President, and Dr. Virgil E. Brown of Sabetha was elected as Secretary-Treasurer.



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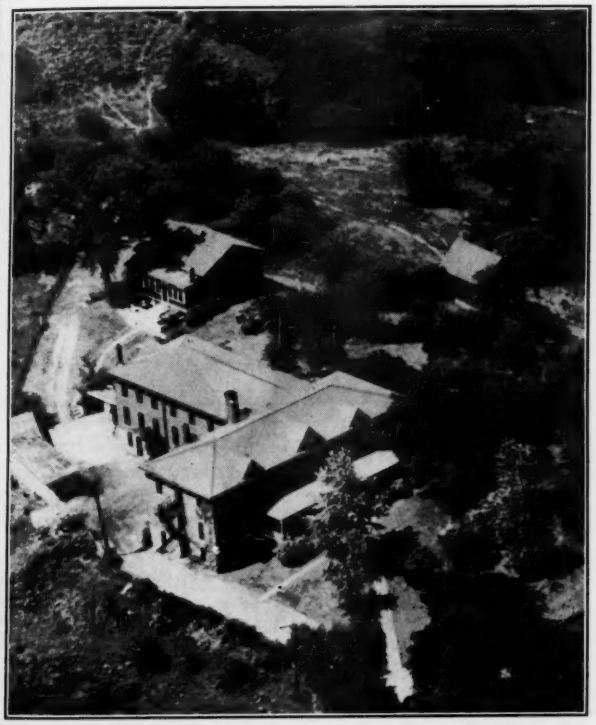

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The Northwest County Medical Society held its annual election of officers at a recent meeting. Dr. M. J. Renner of Goodland was elected as President; and Dr. Dale D. Vermillion of Goodland was elected as Secretary-Treasurer.

The Osborne County Medical Society elected the following officers at its December meeting: Dr. V. D. Parker of Natoma as President, and Dr. J. E. Henshall of Osborne as Secretary-Treasurer.

The Republic County Medical Society elected the following officers at the January meeting of that organization held in Belleville: President, Dr. C. V. Haggman of Scandia; Vice-President, Dr. F. C. Tyree of Wayne; Secretary-Treasurer, Dr. Paul L. Beiderwell of Belleville. The society in cooperation with the Board of County Commissioners is conducting diphtheria and smallpox immunization clinics for children from nine months to ten years of age. Approximately 1400 having been immunized to date.

The Riley County Medical Society held a meeting in Manhattan on December 10 with election of the following officers for 1941: Dr. O. M. Heiberg of Manhattan was elected as President; Dr. R. G. Schoonhoven of Manhattan was elected as Vice-President; Dr. Willard C. Schwartz of Manhattan was elected as Secretary and Dr. W. M. Reitzel of Manhattan was elected as Treasurer.

The Shawnee County Medical Society held a dinner meeting on February 3 in Topeka. Dr. Winnett Orr of Lincoln, Nebraska, spoke on "The Role of Sulfanilamide and other Antiseptics in the Treatment of Wound Infections and Compound Fractures."

The members of Sumner County Medical Society were the hosts to the Cowley, Sedgwick, Pratt, Kingman and Harper county medical societies and to the Kay County Medical Society of Oklahoma, at a meeting held in Wellington on January 16. Dr. F. C. Beelman of Topeka spoke on "Modern Concepts Regarding Tuberculosis Control." At the December meeting of the Sumner County Medical Society the following officers were elected: President, Dr. H. L. Cobean of Wellington; Vice-Presidnte, Dr. J. E. Hill of Conway Springs; Secretary-Treasurer, Dr. R. W. Van Deventer of Wellington.

The Washington County Medical Society entertained the Washington County Press Club on January 14 at Washington. Mr. Carl Ossman of Greenleaf presented motion pictures of a trip to Alaska and Canada.

The Wilson County Medical Society held a dinner meeting in Neodesha on January 13. The February meeting of that organization will be held in Fredonia.

The Wyandotte County Medical Society held a meeting on January 21 in Kansas City. Speakers were: Dr. E. F. DeVilbiss of Kansas City who discussed "The Use of Metrazol in Treatment of Mental Diseases"; and Dr. Lee H. Leger of Kansas City who spoke on 'Headache and Head Pain."

MEMBERS

Dr. B. J. Ashley of Topeka has recently returned from Minneapolis, Minnesota, where he took a post graduate course in ophthalmology at the University of Minnesota School of Medicine.

WANTED— Resident doctor, village and rural practice at Alden in Central Kansas; partially equipped office of late Dr. David T. Muir for rent; good roads; pleasant community; large territory; expenses small; hospitals eight and fourten miles. Write or call Mrs. D. T. Muir, Alden, Kansas.

FOR SALE—Entire office equipment, including electrotherapy machines, instruments, treatment and instrument tables, fluroscope, library, drugs, etc. Write or call, Miss Floy Liston, Baldwin, Kansas.

FOR SALE—Medical Library, 165 volumes, Tice, Sajous, Dictionaries, Hand-books, etc. Also some laboratory equipment. Write, C. F. Deaver, Sabetha, Kansas.

FOR SALE—McKesson Gas Oxygen machine for use of oxygen and nitrous oxide and four tanks (empty) also a Burdick, Infra Red light. Write Mrs. H. J. Terrill, 205 E. 13th Street, Ottawa, Kansas.

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Dr. Donald E. Bux formerly of Topeka is the full-time health officer of the new health unit recently established in Riley County.

Dr. Fred E. Rogers, formerly of Linn, who recently returned from Chicago where he took a post graduate course at the Cook County Graduate School of Medicine, has announced the opening of offices at Ottawa.

DEATH NOTICES

Dr. Alexander P. Williams, 66 years of age, died on January 21 in Neodesha. Dr. Williams was born near Lafontaine on November 2, 1874, and was graduated from the Kansas City Medical College in 1901. He was a member of the Wilson County Medical Society.

KANSAS MEDICAL ASSISTANTS

At a recent meeting the Sedgwick County Medical Assistants heard Mr. Henry C. Myers of the Income Tax Division of the Internal Revenue Service explain pertinent problems in the preparation of income tax returns for physicians.

Dr. Robert P. Knight of Topeka addressed the Topeka Physicians Assistants Society on "Facts about Psychoanalysis" at a meeting on February 10. A tentative program for the state meeting on May 11 and 12 has been arranged by the Topeka Society. It is planned to commence registration at 2:00 p.m. on Sunday, May 11.

Has your group met recently? Won't you please send that information for inclusion in this section.

—Margaret MacKenzie, President.

The sputum positive case of tuberculosis must be hospitalized—Harry Mustard, M.D., N. Y. University.

AUXILIARY

PRESIDENT'S MESSAGE

During the next two months it is my plan to meet every auxiliary member in Kansas whom I have not had the privilege of meeting. How I wish this meant every eligible member in Kansas. Last year Dr. Nesselrode said —"I think it would be a splendid thing if each county medical society and each wife of a physician would assist in seeing that an auxiliary with a complete project program is efficiently sponsored and maintained in each county where such is possible."

Have you a friend who is eligible and lives where there is no auxiliary? Will you write to her and ask her to become a member-at-large? If she becomes acquainted with our objectives and plans she may help organize a new auxiliary in her own county.

In January it was the privilege of the state officers to

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meet with the members of the Wyandotte County Auxiliary and we were stimulated by the presence of sixty-five members and the excellent work they are doing. Plans are being made for a Public Relations Tea when officers of the many lay organizations of the county shall be guests.

With three other members from Labette county, I visited the Neosho County Auxiliary and while they have fewer members, the interest and enthusiasm is just as great. We were delighted with their progress.

This month we are looking forward to our visit with members of Lyon, Shawnee, Saline, Mitchell, Ottawa, and Marshall counties.

The Budget Committee met in Kansas City in January and planned the financing of the convention to be held in Topeka, May 13-15. Mrs. Ransley J. Miller, President of Shawnee county, and Mrs. F. C. Taggart, Convention Chairman met with the committee and plans for program and entertainment were discussed.

Mrs. J. S. Reifsneider, State Public Relations Chairman, has asked Dr. W. W. Bauer, Health Education Department of the A. M. A., to send you copies of the Questionnaire, "Women's Health Interests," and we hope you'll give this serious consideration.

Because this department wants to know who is listening to the A. M. A. radio program "Doctors at Work!" they have asked us to do this piece of work for them. At the National Board meeting in Chicago last November, Dr. Bauer told us his committee had considered each question thoughtfully and hope to find out the type of listeners they are reaching and the interest in the program. Let's get behind this piece of public relations work and ascertain if it is reaching the laity in Kansas.

—Mrs. T. D. Blasdel.

AUXILIARY NOTES

DID YOU KNOW?

Nine counties in Kansas, Butler, Cherokee, Lyon, Marion, Pratt, Sedgwick, Riley, Geary, and Shawnee have full-time county health departments.

Thirty-four towns in Kansas have the Standard Milk Ordinance?

Malta Fever is increasing in Kansas?

Our dues are due?

A new Wagner Bill pertaining to public health and medical care will be introduced in the present Congress? (See page 30 in the January number of the Journal of The Kansas Medical Society.)

The Osteopathic Bill introduced in the Kansas Legislature is in this same Journal.

The American Social Hygiene Association, Inc., is making a concerted drive to safeguard men in military and naval training camps and in essential industries from the ravages of venereal disease. Plans for National Social Hygiene Day, held on February 5 included more than 5000 community meetings in all parts of the country and four regional conferences held in Philadelphia, St. Louis, New Orleans and Los Angeles.

In thirty-five years, 1905-1939, inclusive, Kansas had 64,296 cases and 307 deaths from SMALLPOX—all of which could have been prevented by vaccination. Kansas with a population of 1,864,000, in five years, 1935-1939 had 2,690 cases (an average of ten per week) and eight deaths from smallpox. New York City, with a population of 7,500,000, in the same period had two cases. WHAT SHALL WE DO ABOUT SMALLPOX IN KANSAS?

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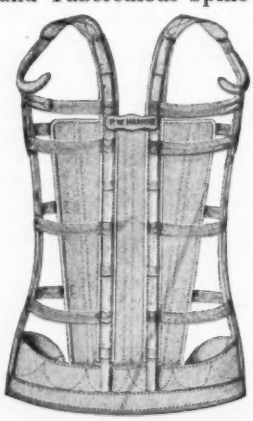

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ADVERTISING NEWS

After visiting cities from coast to coast on its public health educational tour during the past four years, the Transparent Woman exhibit, sponsored by S. H. Camp & Company, was donated to the medical section of the Museum of Science and Industry, Chicago.

It is estimated that approximately 8,000,000 persons, including many thousands of physicians, viewed the exhibit on its tour of the nation.

Dedication ceremonies, which took place recently, were broadcast over NBC's national Blue network, and participating in the program were Morris Fishbein, M.D., editor of the Journal of the American Medical Association, Eben J. Carey, M.D., curator of the medical section of the museum and dean of the School of Medicine, Marquette University, Major Lenox R. Lohr, president of the Chicago Museum of Science and Industry, and Mr. S. H. Camp. Several hundred notables and distinguished physicians were present.

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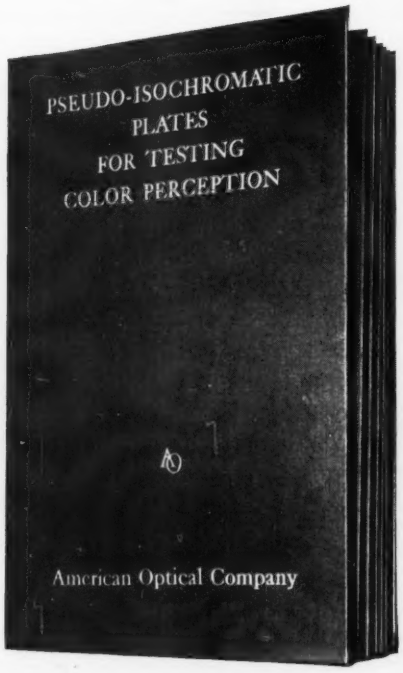

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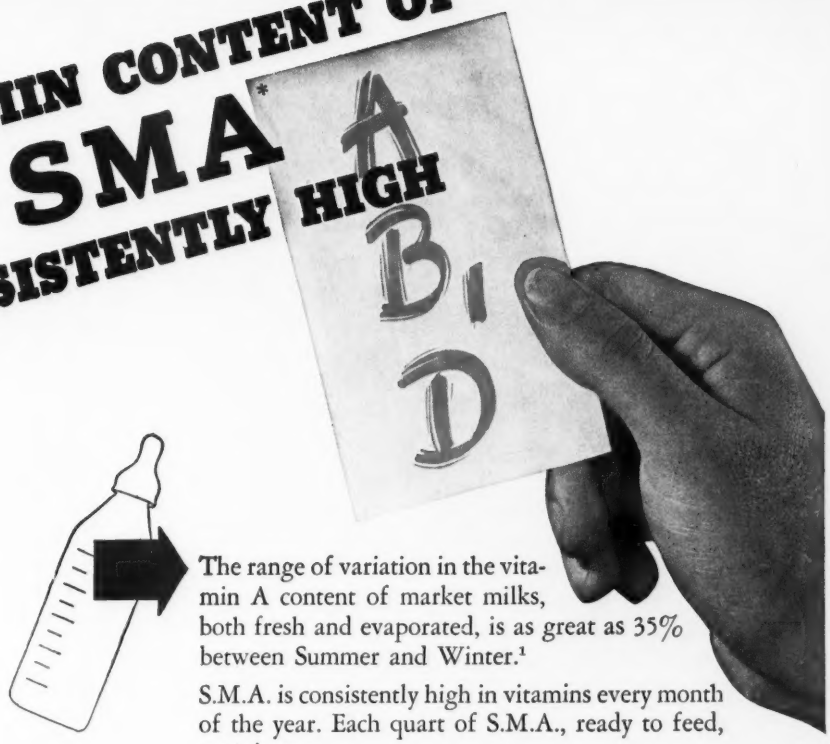

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